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STRANGLED HERNIA

AND THE HISTORY OF THE DISEASE

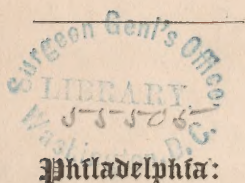
BY J. H. H. H.

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PRACTICAL OBSERVATIONS
ON
STRANGULATED HERNIA,
AND SOME OF THE DISEASES
OF THE
URINARY ORGANS.

BY JOSEPH PARRISH, M. D.



KEY & BIDDLE, 23 MINOR STREET.

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TO

PHILIP SYNG PHYSICK, M. D.

THE fathers of the medical profession in the days of my pupilage are gone—but thou art still among us. Permit one who knew thee in the vigour of manhood, and listened with deep instruction to thy private lectures, before thy elevation to a Professor's Chair, thus publicly to acknowledge the numerous acts of kindness and confidence received at thy hands.

Under these feelings, can I do other than cherish recollections of the past, accompanied with a desire, that now, when the shadows of evening are lengthened out, consolations may gather thickly around thee, soothed by the consciousness of a faithful discharge of duty, and remembering that a grateful community are prepared to acknowledge that thy “lamp has burned for the good of others?”

THE AUTHOR.

P R E F A C E .

It would seem to be in accordance with the general principles, which ought to regulate the intercourse of man with his fellow man, that a reciprocity of information and good feeling, should constitute a common stock, and be converted, if possible, to the common good.

For the accomplishment of this object, it may not be essential that every man should bring in large accessions of treasure, procured by the efforts of unrivalled talents.

Even those plain and simple offerings, which are the result of observation and experience in matters of fact, that have been subjected to the examination and approval of common sense, may be entitled to some nook or corner in the great storehouse of knowledge, where congenial minds may enter and examine them.

With these views I have undertaken the task of writing a book. Not without the forebodings that may accompany any common mind, that has read the wish of a very ancient writer, Oh that mine enemy had written a book.

There is one consolation, however, in the belief that enemies, if I have any, must be very few, and so far as my own feelings are concerned, none.

Therefore, with a firm reliance on the kindness and candour of the medical profession, and an earnest desire to be preserved from doing harm, even if no good is accomplished, I commence the book.

It has long been my opinion, that men possessing similar casts of mind, and engaged in the same professional pursuits, will often very naturally arrive at the same conclusions on subjects that are brought before them.

They may most honestly believe, and announce discoveries, when, to their no small disappointment, they have to realize an ancient declaration, "There is nothing new under the sun."

Angry feelings have been excited by conflicting claims, and the charge of plagiarism has been set up by one party, and denied by the other.

Inasmuch as the meaning of this word, among men of science, is somewhat analogous to certain terms of disgrace, which are used by persons engaged in trade or business, the writer feels particularly anxious to avoid even the appearance of such an evil.

In the acquirement of medical knowledge, throughout my life, an aptitude has been indulged to open the avenues of the mind to the influx of information. This has been derived from various sources; from books, especially from the book of nature, whose leaves have been

unfolded during many a midnight hour, at the bedside of the patient, as well as in the dissecting room. Conversation with medical brethren has also been a pleasing and fruitful source of knowledge.

In the course of time, by reflecting on the facts and observations thus accumulated, some ideas or views may have opened to my mind, which may seem to be new, that may be derived from another source, and yet if called upon to state all the circumstances, from the first conception of the idea, until full birth, I should fail in the attempt.

In order, then, to avoid all future collision and difficulty, it is my desire, if possible, to introduce at the outset, some quit-claim, or renouncing clause, to new ideas and discoveries.

Being no lawyer, and never having sued a man in my life, there may be some difficulty in putting the matter in proper form. Thus much may serve the purpose, viz: Know all men of the medical profession, that the author of this book will immediately renounce all claims to new ideas and discoveries, as soon as the same may be made to appear. He will not enter into litigation, or require any other proof, than plain assertion from any respectable source, on which he will immediately confess judgment; provided the claimant will on his part covenant and agree, to use his best exertions to render his own, and all other useful information in the healing art, as free as the air we breathe.

In conclusion, it may be proper to remark, that my

medical pupillage was under the direction of an excellent and beloved preceptor, Caspar Wistar, M. D., who was, at that time, Adjunct Professor of Anatomy and Surgery in the University of Pennsylvania. Since entering on the arduous duties of medical life, I have been placed in some responsible stations, which necessarily cast me in the way of some experience. In my earlier years, I laboured a long time among the poor in the Philadelphia Dispensary. During one of our visitations, I was appointed by the Board of Health, resident physician at the Yellow Fever Hospital, then situated on the eastern bank of the Schuylkill, on the extensive premises formerly known as the "Wigwam." In this situation, ample opportunity was afforded of observing this disease during life, and of pursuing dissections after death.

After this, in our Almshouse Infirmary, and in the Pennsylvania Hospital, two of the largest institutions of the kind in the United States, it was my lot to have a considerable share of laborious business. While in private practice, in the bosom of a community wherein I was born, and in a city where some of my ancestors, in the days of Penn, lived in a cave on the western bank of the Delaware, enjoying liberty of conscience, I have gratefully to acknowledge a full portion of confidence and patronage.

Now, while no claim is set up for superior talents, I may at least be allowed the possession of a competent share of common sense. Not that double refined and re-sublimated sense, in which some excel; but that which

is adapted to practical purposes in our journey through life. To industry, I must and will lay claim; it is admitted to be a very humble ingredient in human character, and within the reach of the plainest capacity. Yet I set so much store by it, that should it be questioned, I could, without a blush, call all Philadelphia to bear me witness.

I have long been engaged in imparting practical information to numerous private pupils. Scarcely any thing has afforded me greater pleasure, than to walk through the wards of a hospital, followed by a number of medical students, and to observe their close attention to clinical instruction.

Having now, for full thirty years, been labouring in my vocation as a daily practitioner, and having preserved a record of many important cases, I have been encouraged to commit some of the results of my experience to the press, and thus appear before the public as the writer of a book.

I have selected Strangulated Hernia, and some of the Diseases of the Urinary Organs, as the subjects of my first essays.

Should this work meet a favourable reception, perhaps it may prove the prelude to a series of medical and surgical observations, to appear in due course.

But if its value has been overrated, it may at least be permitted quietly to occupy some nook or corner of the storehouse already noticed, where it may repose in oblivion, along with its author.

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INTRODUCTION.

It is not the intention of the author to enter into an elaborate anatomical description of all the parts concerned in Hernia, or Diseases of the Urinary Organs. Such descriptions would be required in a work designed to be strictly systematical; but it would interfere with the present plan of the writer.

It is to be presumed that medical men, who engage in practical surgery, have acquired, by previous study and dissection, a competent knowledge of anatomy. They ought to be familiar with the relative situation of parts, especially blood-vessels, and should strive to understand those probable derangements in natural position, which may be caused by distension suddenly induced, or by gradual and morbid changes in structures. The situation occupied by the epigastric artery in inguinal and ventro-inguinal hernia, should be distinctly understood.

A chapter is expressly devoted to directions for performing the operation, as it may be required in the several descriptions of hernia; and a number of cases are given, which show the safest plan of dividing the stricture, according to my experience; yet I feel particularly anxious that the subject of femoral hernia should be clearly understood.

The exact position of the epigastric artery must ever be borne in mind, because, if an ignorant and in-

cautious operator attempted to make an incision through the crural arch upward and *outward*, he would very probably divide the epigastric artery near its origin.

I have sometimes feared there may be too much anatomical nicety in the description of hernia. The various layers of fasciæ may tend to confuse a young operator. Far be it from me, however, to give to the indolent pupil the slightest pretext for ignorance and carelessness.

When I was in the frequent practice of demonstrating, before my pupils, the parts concerned in femoral hernia, I deemed it of primary importance to give to the learner a simple and distinct idea of the real seat of stricture, detached from every other consideration appertaining to the subject. This may be done by dissecting through the integuments, and removing from the groin the lymphatic glands, and all other obstructions to the passage of the finger under the crural arch into the abdomen.

Let the index finger be now pushed firmly in a direction *towards the pubis*—then bend the first joint of the finger and slowly withdraw it from the crural arch. In doing this, the pupil will be sensible of a sharp or acute tendinous edge that he has hitched upon his finger. This is the real seat of stricture in femoral hernia. It is the reflected edge of Poupart's ligament, and may with great propriety be called Gimbernath's ligament, because this surgeon first called the attention of the profession to this particular structure.

I can enter into the feelings of a young operator when his skill may be tested in a case of femoral hernia, perhaps in some situation remote from many ad-

vantages to be met with in a city—not even anatomical references. If well-informed, he will be likely to be diffident; he may begin to tax his memory about all the precise anatomical details connected with femoral hernia. He may be startled at the fear that some important points have been forgotten. For a time he may be confused. It is a moment for him to be collected and firm. Let him calmly reflect and simplify his subject. After he has, by safe and careful dissection, opened the hernial sac, conformably to the rules laid down, what is the point to be kept steadily in the eye of his mind? Is it not the true seat of stricture. To find this, let him introduce his finger along the strangulated part, on the side next the pubis, and then with the very tip of his finger he may recognise the sharp tendinous edge of Gimbernat's ligament. Here fears may again assail him. He may suppose that, in dividing the stricture, he may wound the epigastric artery, the spermatic chord, &c. Let him lay aside his fears, and, conformably to directions, introduce the curved blunt-pointed bistoury under the stricture, on the *inner side* of the strangulated bowel towards the *pubis*, and in the very gentlest manner divide the stricture *upwards*. He will be delighted to find what an extremely slight incision will be sufficient to enable him to pass his finger into the abdomen by the side of the strangulated part. The epigastric artery lies on the outward side, and is secured from harm by this procedure. I have for many years pursued this course, generally inclining the edge of the bistoury a little inward, and have never had reason to suspect that I ever inflicted an injury on the spermatic chord, or epigastric artery.

It is hoped the solicitude I feel on the subject of femoral hernia will be excused, even if some tautology should be found in the course of the work. Considerable complexity is necessarily connected with this subject, when viewed in all its parts. My object is to disentangle it from difficulties as far as possible, and to fix the mind of the operator, as he is about to proceed, upon the simple and prominent points which will guide him safely in his course.

It is not in accordance with the plan of the writer to take up the consideration of trusses. Various instruments of this description are before the public. Each must finally stand on its own merits. It is also worthy of remark, that surgeons are far from being the sole umpires on this subject. Hernia is a very common disease, and a numerous body of persons have had ample experience in the use of the truss. Many of these individuals are men of intelligence and reflection, who feel themselves qualified to form a judgment of their own. Hence public opinion will materially regulate this subject, independently of the medical profession.

On diseases of the urinary organs, I would simply observe, that an accurate anatomical knowledge of the parts, both in a natural and morbid condition, is of the highest importance. Without this, a practitioner would fail in his efforts to relieve a patient from great suffering and danger, at a moment when his services were imperiously demanded. With it, he may prove the instrument of speedy relief from one of the most painful conditions to which the human frame can be subjected.

In addition to anatomical knowledge, there is a peculiar tact in the use of the catheter, that can only be acquired by practice; it is, therefore, highly necessary that the student should avail himself of every opportunity to introduce the instrument on the dead subject.

The position of the third lobe of the prostate, and the manner in which its enlargement produces retention of urine, and obstructs the passage of the catheter, is worthy of attentive observation. A preparation of a diseased gland in spirits, with the urethra attached, answers an excellent purpose for illustrating this difficulty. I have endeavoured to convey to the reader a clear idea of this subject, by referring to several plates appended to this volume. The drawings were executed by an ingenious artist of this city, from preparations now in my possession.

ERRATA.

At the dash line, p. 57, the following caption has been accidentally omitted.

SECTION V.

DIFFICULTIES OF REDUCTION, FROM INFLAMMATION.

Throughout the work, for *stercoracious*, read *stercoraceous*.

PART I.

STRANGULATED HERNIA.

ON

STRANGULATED HERNIA.

CHAPTER I.

DIFFICULTIES IN THE DIAGNOSIS OF HERNIA.

It is not an easy task, in some cases of hernia, to determine the real nature of the disease; and from want of attention on the part of the surgeon, serious and even fatal mistakes have been made. The utmost care is sometimes necessary in the examination of the patient; and when all caution is employed, it is still possible for the experienced surgeon to be deceived. Without attempting to describe every cause of error in the diagnosis, it is proposed, in the present chapter, after premising an outline of the common symptoms of hernia, to describe such causes of mistake as have been illustrated by cases occurring under my own observation.

The symptoms of strangulated hernia are as follows: pain and tenderness in the tumour, and extend-

ing over the whole abdomen, particularly about the umbilicus. In the early stages, the pain occurs at short intervals, gradually becoming more fixed. At the very onset of the attack, an evacuation from the bowels frequently occurs; after which the discharges are suspended; retching and vomiting ensue, and the stomach rejects all kinds of medicine or aliment. If these symptoms continue for a short time, fever is developed; the abdomen becomes swollen and tender; and the patient is thrown into a state of distressing and constant torment, which is fully depicted in the countenance. Among the most alarming symptoms are, singultus, tympanitic abdomen, and stercoraceous vomiting. This last mentioned symptom is generally considered a fatal one, but I have known recoveries after this event. At last there is a cessation of all pain; the patient lies calm and comfortable, and he and his friends may suppose that the danger is over. This idea is delusive. There is, indeed, an exemption from suffering, but the clammy sweat, the death-like coldness, and the feebleness, or absence of the pulse, proclaim to the practitioner that death is at hand. The strangulation has caused inflammation, which has terminated in mortification.

SECTION I.

HERNIA MISTAKEN FOR COLIC.

There are certain associations connected with words that have an important bearing on practice—thus: if I were called upon to select an example, I should un-

hesitatingly say, that *colic ought always to be associated with the idea of strangulated hernia*. I deliver it as an opinion that facts will sustain, that if the practice were universal to suspect every case of colic to be a case of strangulated hernia, many valuable lives would be saved.

The symptoms of colic and hernia are so completely identified, that, in a majority of cases, no human skill can discriminate between them without the most careful investigation. The attendant symptoms of an incarcerated bowel differ in no respect from those of a severe attack of colic. Thus, violent spasmodic pain in the abdomen, frequent retching and vomiting, and constipation of the bowels, so often met with in colic, are also observed in strangulated hernia. The symptoms, in both cases, are produced by the same cause, an obstruction in the course of the alimentary tube. In colic, however, the obstruction is produced by a spasmodic contraction of the muscular fibres of the intestine, which usually yields to a proper application of relaxing and anti-spasmodic remedies; while, in hernia, a portion of the bowel is closely impacted and retained in a small space, and in an unnatural position, from which it can only be relieved by returning the protruded parts to their proper situation.

Let me, therefore, enforce the precept so clearly founded in reason—in *every case of colic suspect strangulated hernia*. Painful experience has taught me, that a constant attention to this injunction is of the utmost importance. I have frequently been called by respectable practitioners, unaccustomed to surgery, to consult with them upon what they deemed obstinate cases of colic, when an examination of the

groin has revealed the true cause of the symptoms to be a strangulated bowel! Too often this discovery has been made at a juncture when all the symptoms declared that the prospect of success from an operation was very slight, or that the relief of the patient was beyond the reach of human skill. Numerous cases of this description have fallen under my notice. I shall content myself at present with briefly noticing one of these, which illustrates, in a striking manner, the importance of making the necessary examination; others of a similar character will be found in the sequel.

CASE I.

Hernia mistaken for Colic.

I was called to visit the wife of a respectable farmer, reported to be very ill with colic. I obtained from the attending physician the following history of her case. Two days previous to my visit, while sweeping the parlour, she was suddenly seized with violent pain in the abdomen, vomiting, and all the symptoms marking an attack of colic. The family physician, a man of great respectability and skill, was immediately sent for, and steadily pursued the usual means for overcoming the symptoms until the evening in which I saw her in consultation. The doctor informed me, that he had found the case so obstinate that he had feared intussusception. The bowels had not been moved from the commencement of the attack.

Before going into the room, I stated to him that I suspected strangulated hernia, and requested him to

make an examination of the groins. In a short time he returned, and confirmed my suspicion. A small tumour was discovered in the left groin. It was painful to the touch, and could scarcely be detected by the eye, as it was covered with a considerable quantity of adipose matter.

The condition of the patient was by this time very critical. Her pulse was feeble, but her tongue was moist, and the abdomen bore pressure very well. Her countenance was sunken, and her complexion of a bluish cast. Under these circumstances, it was thought advisable to propose the operation, as affording the only hope of success. After candidly stating my views to the patient and her husband, they at once consented to the operation. An opiate was administered by the mouth, and by enema; and I proceeded by candle-light.

After making the incisions through the integuments and fasciæ, I exposed a small femoral hernia. The sac was carefully opened, and a small quantity of fluid escaped, having a slight cadaverous smell. A portion of the intestine was of an ash colour, and flaccid—a state of things which I consider highly unfavourable. The finger was introduced to the point of stricture, which was readily divided.

Directly after the operation, the pulse was very feeble, and the skin cool; but after the patient was placed in bed, her system re-acted, and she expressed herself much more comfortable. I left her late in the evening.

Next morning I received a letter from her physician, informing me that she died at about two o'clock, A. M.

I would here impress upon the surgeon the importance of making a thorough and minute examination of the different points at which the protrusion in hernia is likely to occur, and not to be content with a superficial view. For, though he will generally be able to decide upon the case without difficulty, yet circumstances do sometimes occur which tend to obscure the tumour, and may lead to uncertainty. I shall mention a case in the sequel in which I was myself deceived, and I have no doubt others have been similarly situated.

Nor should the surgeon rely simply on the statement of the patient, without examining for himself. The tumour may be so small as to escape the attention of the individual affected; it may have occurred very recently, and may not have been noticed; or, as sometimes happens in the case of young and modest females, its existence may be concealed from motives of false delicacy.

On the whole, in every suspicious case, it is the safer plan for the surgeon to make for himself a careful examination. No harm can result from pursuing this course, while an observance of it, I am convinced, would tend very much to the safety and profit of the patient, and to the credit and usefulness of the medical attendant.

SECTION II.

DECEPTIVE SYMPTOMS.

When the bowel is suddenly subjected to strangulation, the pinch received by this delicate part must

naturally excite, for a moment, an increase of peristaltic action, which, operating below the stricture, may prove sufficient to expel the fecal matter, and thus a free stool may be one of the first evidences of strangulated bowel. This very symptom is so entirely the reverse of the common opinion entertained of incarcerated intestine, that even a practitioner, unaccustomed to the disease, might readily conclude that there could not exist any mechanical obstruction to the passage through the alimentary canal. Under this impression days may elapse, and the proper period for successful operation may pass over, before he discovers his mistake. Other causes may operate to keep up this deception, until mortification and death reveal the truth.

Some years ago, I was called, by my departed friend Dr. Knight, to visit an aged widow in Keys' alley. The symptoms of strangulation were perfectly plain; the operation was proposed, and consented to by the patient; and the hour fixed for its performance; but, on our meeting again for the purpose, she had changed her mind, and would not submit. The patient and her female attendants insisted upon it that her bowels were opened, and that she passed flatus very freely. In a few days the patient died. I examined the body after death, in company with Dr. Knight, and found a portion of bowel strangulated and mortified.

Another instance, somewhat similar to this, occurred in the Pennsylvania Hospital. A patient was brought in, and reported to have had discharges of fecal matter and flatus; yet, on operating, a portion of bowel was found incarcerated and sphacelated. The patient

died. Several instances, strongly confirmatory of the views here advanced, will be found in the succeeding pages; and the details of one case of this kind will be added at the close of this section.

I am inclined to believe that many of these deceptive symptoms depend upon the frequent use of injections, especially when administered on the old fashioned plan of pipe and bag. In this way it often happens that a considerable portion of air is injected into the bowels, and, when returned, may convey the idea of an open passage from the stomach to the anus. The enema may also bring away a sufficient portion of fecal matter to colour the injected fluid, which, without close inspection, may pass for a real stool.

CASE II.

Strangulated Hernia with fæcal discharge.

9th mo. 20th, 1819.—I was called this morning to the Pennsylvania Hospital, to consult with my colleagues, Drs. Hewson and Hartshorne, on the case of an old coloured man affected with strangulated inguinal hernia.

The tumour was distinct, and the symptoms of strangulation sufficiently marked, though less severe, than in ordinary cases. As his stomach was retentive, we agreed to try the effect of purgatives for a few hours. We directed jalap and cream of tartar to be administered frequently, and in divided portions.

In the afternoon we met again. The house-surgeon reported that he had taken ʒiiss. of jalap mixed

with cream of tartar, and had retained it on his stomach, but without any effect upon his bowels. The tumour was still firm, and the symptoms well marked. We concluded to advise the operation immediately after making the necessary preparations; and, as we were about to have the patient carried to the operating room, he had *a copious evacuation from the bowels*, accompanied with a discharge of flatus. This circumstance induced us to delay the operation, supposing that the stricture had at least partially yielded. We then left the patient, to meet again on the following morning.

21st.—On visiting the patient this morning, we found that his symptoms were still more alarming. In addition to pain and constipation, he was affected with vomiting and singultus. The tumour was firm, and no discharge had followed that which occurred at our last visit.

We at once concluded to operate. Dr. Hewson performed the operation. On laying open the sac, a portion of intestine was found in a state of high inflammation, and coated with a thick layer of coagulated lymph. We concluded to detach the lymph before returning the parts; which was readily effected by means of the handle of the scalpel. The intestine was very much thickened by inflammation; so that Dr. H. was obliged to dilate the ring freely, in order to accomplish the reduction. The patient bore the operation very well, and recovered completely under Dr. Hewson's care.

SECTION III.

DISEASES RESEMBLING HERNIA.

There are several diseases occurring in the parts in which hernial tumours are generally developed, which may, by the inattentive observer, be mistaken for it; and a practice may be instituted, in consequence, which may lead to serious results. In a large proportion of cases, the mere examination of the external tumour will be sufficient to decide the nature of the complaint. In small hernia, however, and especially when the tumour is obscured by fat, a more accurate examination is often necessary; but little doubt can be entertained, even under these circumstances, when the history of the case is minutely investigated. Still, as mistakes in the diagnosis have sometimes occurred, it may be proper to notice some of the diseases with which hernia is confounded.

One of the most common sources of error arises from an enlarged state of the inguinal glands, forming a tumour resembling in size and shape a hernia. Instances are on record of hernial tumours being treated as inflamed glands until the period for successful treatment has passed by. Cooper and Petit relate several cases of this description which fell under their notice, in which the error proved fatal to the patient; and Lawrence tells us, that he knew a hospital surgeon of considerable eminence, who allowed a patient to die of strangulated hernia, under a belief that the tumour in

the groin was a chain of inflamed glands. A *post mortem* examination revealed the true cause of death.

I have never met with a case in which this error proved fatal, though I have known inflamed glands to be mistaken for hernia. I was called, late one evening, to visit a patient, in consultation with two respectable physicians. The messenger was very urgent, and requested that I would come prepared to operate.

On arriving at the place, I found a man who appeared to be in great distress, complaining of violent pain in his abdomen, &c. I soon discovered, however, that his violent illness was altogether a pretence, and that the tumour in the groin was a venereal bubo! He had been attempting to deceive his medical attendants, for the purpose of concealing from his friends his real situation, and had completely succeeded.

Another very similar case occurred to me. I was called, by a respectable medical practitioner, to see a patient with whom he had been labouring for a considerable time, to reduce a rupture. He had been freely bled, and the taxis had been diligently tried, and the physician now called on me to operate. On examining the tumour, I immediately recognised a venereal bubo. On mentioning the fact to the patient, he promptly and positively denied it. I then pulled back the prepuce and exposed a large chancre on the glans penis. This terminated the consultation.

The following note from my case-book presents an unusual complication of circumstances leading to deception.

8th. mo. 1822.—In a late case at the hospital, which I saw in consultation with Drs. Price and Hewson, we supposed the patient to labour under a strangulated

hernia. He represented, that he had been subject to hernia for some years, and had been in the habit of wearing a truss; that he had lost his truss at sea, and, since that accident, his rupture had descended. He was at this time labouring under an attack of gonorrhœa, with considerable swelling of the scrotum and surrounding glands. He had fever, and his bowels were moved by medicine. The tumefaction in the groin was very considerable, and resembled very much the tumour of an omental hernia. He was directed bleeding from the arm; leeches to the abdominal ring; the recumbent posture, with the hips elevated; and we determined to watch the case and consult again if necessary. In a short time it was discovered, that the tumour resembling hernia arose from an abscess which had formed in the groin; and that the real old hernia was on the opposite side, and had not been altered from its usual appearance.

A frequent source of error in the diagnosis of hernia arises from the appearances presented by the spermatic veins when in an enlarged or varicose condition. This disease, called *circocoele*, is very common, particularly among young men; and is frequently mistaken for hernia. I have been called upon very often by individuals affected with *circocoele* who have worn trusses for a considerable time, under an impression that they laboured under hernia; and, not unfrequently, their fears have been confirmed by their medical advisers.

In cases of doubt, the point may be readily settled by requesting the patient to lie down; when, in the *circocoele*, the tumour immediately recedes: moreover, it communicates to the touch a peculiar sensation; so that when grasped between the thumb and finger, it

resembles a bundle of worms entwined together beneath the integuments. To render the case still more plain, the abdominal ring should be carefully examined.

A case is mentioned by Petit, in which the saphena vein was so much distended as to be mistaken for a femoral hernia, and under this impression, a truss was actually applied by a physician. The tumour, in this case, was reduced by pressure, was increased by coughing, was produced by the erect position, and disappeared in the recumbent posture.

Hydrocele of the tunica vaginalis testis, or of the spermatic cord, has occasionally been mistaken for hernia; but the slow progress of the tumour, and the transmission of light through the part, should render the distinction certain.

I have seen one case, in which a thickened hernial sac produced a tumour, which was a cause of deception. The patient was an old coloured man who, some years ago, was brought into the alms-house infirmary, labouring, as was supposed, under strangulated hernia. He was affected with vomiting, severe pain in the abdominal region, tympanitic abdomen, tenderness on pressure, and obstinate constipation. It was ascertained that he had been affected with rupture for many years; and that strangulation had taken place occasionally. There was a distinct tumour in the groin.

Under these circumstances, a consultation of the surgeons of the institution was called to decide on the propriety of an operation, and the students were collected to witness it. I recognised in the man an old Dispensary patient, whom I had frequently attended; and recollected that, on one occasion, I had seen him

in an attack of strangulated hernia, and had reduced the parts by taxis. On a close examination of the tumour, we were all struck with its flabby and inelastic feel, differing very much from the firm and elastic feel of a strangulated hernia. As the case was obscure, it was concluded to postpone the operation until further light could be thrown on it. The next day, the friends of the patient removed him from the infirmary, and Dr. Hewson saw him. The symptoms continued unabated, and the patient died.

Dr. Hewson obtained permission to examine the body, and found that the tumour was caused by a hernial sac very much thickened by chronic inflammation. This old sac had been affected with recent and violent inflammation, which had extended to the peritoneum, and involved it also in general high inflammation.

CHAPTER II.

TREATMENT OF HERNIA.

SECTION I.

ON THE MEANS OF REDUCTION EMPLOYED BEFORE THE OPERATION.

VARIOUS remedies have been proposed by surgeons for relieving a strangulated bowel, before proceeding to an operation. The object of all these is to bring on a general relaxation of the system, and quiet the irritability and pain of the patient. Some such measures should certainly be employed, and among them, *blood-letting* holds a conspicuous rank. I have occasionally seen cases of strangulation in which free bleeding brought on relaxation, and the protruded bowel was happily returned.

Purging has been proposed ; but this practice, where the stricture is recent, rather tends to aggravate than to relieve the symptoms. In cases of old and irreducible herniæ, the purging plan may be useful.

Opiates are valuable remedies when administered under proper circumstances. Sometimes, after the free use of the lancet, an opiate has been administered, the stricture has given way, and the bowel has

been returned, with little difficulty. The warm bath also is entitled to a trial.

Among the most prominent means for producing relaxation, and one which is very often employed, is the *tobacco enema*. This remedy is, I believe, recommended by most surgeons, before proceeding to an operation. Such a general recommendation I consider of doubtful propriety, particularly where the system has been reduced by previous depletion. In cases in which there may be a deficiency of constitutional vigour, I should be very cautious about proposing it; believing that, as a general rule, the depressing effects which it produces on some constitutions are more to be dreaded than even the operation itself when performed by a skilful hand. This opinion has been formed from some experience. Nor am I alone in my fears:—the distinguished Hey, of Leeds—a man whose opinions are entitled to the greatest respect—says that an operation should never be performed on a patient while labouring under the effects of a tobacco enema. He even mentions the case of a patient who died soon after his removal from the operating table, under the circumstances mentioned.

I was once concerned, with several other surgeons, in a case where we were all very much alarmed at the effects of a tobacco enema. The patient was suffering from a disease of the urinary organs; and soon after the injection was administered, he fell into a state of the most dreadful prostration, from which he was aroused with the greatest difficulty, by appropriate treatment.

I understand that a formula directing two drachms of tobacco to the pint of water is used in one of the

London hospitals. This I should consider very dangerous. One drachm, or even half a drachm, I consider sufficiently strong; and even then advise its introduction gradatim, carefully watching its effects.

Warm fomentations to the tumour have been proposed by some surgeons: these, however, by causing increased activity and fulness of circulation, rather tend to aggravate, than to relieve the symptoms. *Cold applications* are now generally employed; and are, as a general rule, much to be preferred. A bladder filled with ice and applied to the tumour, is a common practice. I recollect a case in which, after a free bleeding, this plan was resorted to, and the bowel speedily returned by its own efforts.

Much has been said and written about the *taxis*, and much may be properly said, for the subject is an interesting one. For my own part, I am inclined to consider *taxis* in hernia, and crepitus in fracture, as two unhappy words. They are so intimately associated with the idea of mechanical force, that the poor patient may be subjected to an increase of pain and danger by their application to practice. Thus I have seen a young house-surgeon, with more zeal than knowledge, work away upon a lower extremity almost with the force that would be employed in mauling rails; and, while twisting and pulling the limbs of the poor patient, his ear was at certain points so adjusted, as to catch the sound of a crepitus, to decide the question of fracture! If a practice of this kind was obviously improper, and calculated to increase the pain and inflammation of the injured parts, how much more improper must it be when applied to a strangulated and inflamed bowel! Thus, when I was a student, I

once saw a medical practitioner take off his coat, and fall to work at the taxis in a case of strangulated hernia, with all the force and industry that would be required for some laborious mechanical operation. He pushed and dug at the poor patient at a terrible rate, and all without success!

Now let common sense speak on this subject. What can be more irrational than to apply force to a tender bowel already in a state of inflammation? What more likely plan to hurry on the bowel to mortification, and the patient to death? I lay it down as a principle that all force in such a case is improper—*arte non vi* should be the maxim of the surgeon.

There is another view to which this subject is entitled. Let not the young surgeon despise the innate capacity which even the ignorant possess, of adapting means to their own relief which are the result of their own experience. I have often met with patients who were expert in performing the taxis for themselves; and for many years past, I have not permitted professional pride to prevent me from requesting patients to try their own skill in the reduction of the rupture. To illustrate these remarks, I will state a case. An ignorant servant-woman was violently attacked with a small strangulated femoral hernia. When the patient was in a state of relaxation, and at a favourable moment for the trial, I requested her to "try to put it up;" and I carefully watched her movements. She laid upon her side, inclined the trunk forward, drew up her knees, and flexed the thighs upon the pelvis; thus causing complete relaxation of the abdominal muscles and fasciæ, and, by her own efforts, reduced the incarcerated bowel.

An old anatomist of a facetious turn, and fond of his stomach, used to say, that after taking so much pains to inform himself of the structure of the parts concerned in deglutition, he could not swallow better than other men ;—and the oldest and most experienced surgeons must admit that, in some cases, even the ignorant compete with them successfully in performing the operation of the taxis ;—but let not this anecdote be construed by the indolent into a plea for inattention and ignorance.

The celebrated Desault was so fully convinced of the great danger of immoderate efforts in applying taxis, that he condemns it in almost every instance. In his opinion, the bruising and other injuries inflicted on the bowel by the surgeon, in such attempts, may render the state of the patient as critical after the reduction, *when accomplished*, as it is before the reduction. Desault has witnessed many cases that tend to show a great difference in the mortality after operating, in favour of those operations which have been performed on patients who have not been previously subjected to the taxis. “You may always hope for success,” he says, “in a hernia which has not been touched before operating.”*

He often succeeded completely in operating upon patients who had not been tampered with, even after the strangulation had continued four or five days ; but when strong efforts had been made to reduce the hernial contents, he almost constantly met with a fatal result.

* Ouvres Chirurgicales par Bichat, p. 334.

SECTION II.

ON THE OPERATIONS FOR INGUINAL AND FEMORAL HERNIA.

After having employed without success the usual means for the reduction of a hernia, we should proceed to the operation; and here it may be remarked, that much danger often arises from improper delay. Physicians, it is to be feared, are too apt to rely on subordinate means until at last they are obliged to resort to the knife when too late. From six to twelve, or at most twenty-four hours, according to the urgency of the symptoms, affords sufficient time to employ the ordinary means for reduction.

The longer I live, and the more I see of strangulated hernia, the more firmly I am convinced of the correctness of the observation of the distinguished Hey, given to us as the result of a long life of experience. "I have often had occasion to regret," says he, "that I performed the operation *too late*, but never that I performed it *too early*."

When the operation is concluded upon, it is my uniform practice, as in most other operations, to give an opiate, either by the mouth or rectum. I am aware that the general application of this practice is objected to by some men of high character:—it is said that opium is a stimulant, and tends to excite the system, produces fever, &c. This fear, I believe, is grounded in theory rather than in practice. I give opium *to prevent fever*, and believe the practice not only to be successful, but rational. The calming influence gene-

rally produced by this article tends to lessen the pain of surgical operations, and the shock which they occasion; and hence, it assists in mitigating one of the great sources of subsequent reaction and fever. I have never seen any other effect produced by it, though I have employed it very generally in my surgical practice.

Having prepared the necessary instruments, the patient should be placed on a convenient table, and the parts over and around the tumour are to be shaved. Supposing the hernia to be scrotal, we commence the incision a small distance above the external abdominal ring, and extend it downward over the tumour nearly to its termination. In doing this, some small branches of the external pudic artery are divided, which, though of no great consequence, should be secured by ligatures, to prevent the blood from confusing the parts as the operation advances.

In the first incision, it is my practice to pinch a fold of the skin, covering the tumour with the fingers of the left hand, and to request an assistant to do the same on the opposite side. The sharp pointed bistoury, with its back towards the tumour, is passed through the elevated portion of skin, and the cut made upwards: in this way a large incision is speedily effected, without the least risk to the parts below. Care should be taken to have the wound of sufficient extent to prevent subsequent embarrassment.

After the first incision through the skin, a coat of dense cellular membrane presents itself, which must be carefully divided. This is easily done by cutting with a sharp pointed bistoury upon a small silver director. This latter instrument seems to be despised by some modern surgeons, who tell us we should depend upon

our powers of skilful dissection with the scalpel. Their advice may tend to foster professional pride, but it is certainly not judicious if safety and expedition are desirable. The director is passed under a layer of this cellular fascia, and a free incision is made upon it. By adopting this plan, all risk of wounding the bowel is prevented, and the cellular substance can be divided much more rapidly than by using the scalpel, especially in femoral hernia.

Much has been said of the different layers of fascia to be divided before coming to the sac: these are demonstrated with the greatest minuteness and accuracy, and are well calculated, from their apparent complexity, to alarm the young practitioner. This extreme anatomical nicety appears to me unnecessary;—no matter how many layers are presented, they must be divided until we arrive at the tendon of the external oblique muscle, and expose the sac.

Having reached the sac, the most important part of the operation commences. On opening it, the surgeon is often assailed by difficulties which I shall endeavour to expose in detail hereafter. We will suppose, however, that the case is a plain one. The sac will be found to contain fluid, sometimes in considerable quantity; and a distinct point of fluctuation presents itself, as in an abscess. This spot should be selected for the opening.

The opening should be made, with caution. The prominent point of the sac should be *pinched up* with a small pair of forceps, and a sharp thumb lancet or scalpel applied, and carried obliquely upward. The sac being opened, the fluid will at once escape. If it be of a bloody colour, it may alarm the young prac-

titioner, but this is neither uncommon nor unfavourable. Having made the puncture, introduce the silver director, and cut upon it with the blunt-pointed bistoury, in order to make an opening sufficient to admit the finger. This is to be considered the best instrument for ascertaining the seat of the stricture, and the best safeguard against accident. In doing this, the blunt-pointed bistoury should be employed, and the sac freely divided so as to present a full view of its contents. The finger, with the nail closely pared, should then be carried up to the neck of the sac, and the seat of stricture is, in general, readily ascertained.

At this stage of the operation, it is important to recollect the relative position of the epigastric artery and the hernial sac. In the species of hernia of which we are now speaking, where the bowel passes down through the abdominal canal, the artery is found on the inner side of the neck of the sac; while in ventro-inguinal hernia it lies upon the outside of the neck. As it is sometimes difficult to distinguish these two varieties of the disease, it becomes a matter of importance to fix a rule whereby we may escape the artery in the event of encountering either form.

Various directions have been given by different writers, in regard to the direction of the incision at the ring: some have advised that the surgeon should cut upward and outward; while others, of high character, have recommended a directly opposite course. Others again, have been determined in their choice of direction by the position of the spermatic cord.

These different opinions may tend to confuse and embarrass the operator; it is therefore the safest plan

for him to follow the advice of Cooper and others in dividing the stricture directly upward.

The manner in which the incision should be conducted, is an important consideration. The finger should be passed gently up to the stricture, and there retained. The blunt-pointed bistoury should then be introduced to the same point, with its side lying flat upon the finger. Pass the instrument up, until it is felt by the finger to have passed under the stricture. Its cutting edge should then be carefully turned up, and a very slight movement is generally sufficient to relieve the strictured part, and enable the operator to pass his finger by the side of the bowel into the abdomen. Here I would remark that I am not anxious to have a sharp instrument for this purpose, for the parts to be divided are so firmly distended, that very little cutting is required to separate them; and, by too free an incision, we may enlarge them unnecessarily, and thus expose the patient to the danger of a return, or an increase of the protrusion after the operation.

A curved bistoury with a narrow blade I prefer to the straight bistoury of Cooper, so generally employed. The curved bistoury carried in the pocket-case, the blade of which is moveable on the handle, is often used. To render the incision more certain with this instrument, the blade should be firmly secured to the handle by a tape string. I am in the habit also of shielding the cutting edge, to within a short distance of its point, by wrapping around it a piece of fine rag or tape.

The stricture may exist both at the internal and external ring, or at either of these points separately. Should a stricture be discovered at the external ring,

this should be divided, and if any difficulty occurs, the finger should be passed on in the direction of the internal ring, to ascertain its state, before any attempts are made at reduction. Should it be impossible to reach the strictured point by the finger, the director must be substituted.

Having removed every cause of obstruction, we are next to return the protruded parts, supposing the case to be one in which nothing occurs to contra-indicate this course. This should be done in the gentlest manner. If the bowel does not readily yield, the finger should be again introduced, and a further division of the stricture made.

The reduction being effected, the surgeon should carefully examine the rings with his finger, until he is fully satisfied that all the parts are in their natural position. The external wound should then be lightly dressed with adhesive strips; or, if the incision has been large, the interrupted suture may be required as an additional support. The patient should be directed to preserve as much stillness as possible, maintaining the limbs in the flexed position. If restlessness prevail, the system should be kept under the influence of a moderate opiate. The diet should be scrupulously restricted to mild, farinaceous articles until all risk of inflammation has passed away. As a means of maintaining the flexed position of the limbs, I have found great advantage in placing an angular box and a pillow under the thighs and legs of the patient.

Should the bowels continue constipated after the first effects of the operation are over, small doses of castor oil with enemata, may be safely resorted to. Symptoms of inflammation of the peritoneum may

sometimes follow the operation, owing to the extension of inflammatory action from the strictured part :— these should be combated by the usual antiphlogistic measures employed according to the judgment of the practitioner.

As a general rule, I would advise caution in the employment of rigorous measures, to prevent apprehended danger after the operation. It should ever be borne in mind, that the system has received a severe shock— and after the removal of the cause which produced it, some time should be allowed for agitation to cease. Hence, mild and soothing treatment, with occasional opiates, will be more likely to produce a happy result than an indiscreet resort to rigorous antiphlogistic means. In the subsequent narration of cases, it will be seen that the lancet was very seldom employed after the reduction of strangulated parts.

I will now offer a few remarks on the operation for *femoral hernia*, which differs but little from that just described. The tumour is generally much smaller in this than in inguinal hernia ; and on this account I prefer making a crucial incision through the integuments, by pinching up the skin, as was recommended in inguinal hernia. A free incision is carried horizontally over the tumour, and another made to cross it at right angles. The flaps are then carefully dissected up, and the fasciæ divided with the bistoury and director until the sac is exposed. The sac in femoral hernia generally contains very little fluid, and hence more caution is required in opening it. The situation of the neighbouring vessels also offers an additional reason for deliberate and careful proceeding. It will be recollected, that the great femoral artery and vein are con-

tained in the same sheath which envelopes the hernia, and the epigastric artery should also be borne in mind. The last mentioned vessel arises from the external iliac, just as it passes under Poupart's ligament, where it takes the name of inguinal artery; hence its origin is very near to the outside of the reflected edge of Poupart's ligament, called Gimbernat's ligament, which is the seat of the stricture:—a very slight division of the ligament outward would separate the artery at its origin. In dividing the stricture, it is important, if possible, to have the finger as a guide, and by all means to effect the division upwards, and rather inward. Gimbernat has advised to separate the ligament from its connection with the pubis:—this advice I consider quite unnecessary, as a very small division is generally effectual.

Occasionally the obturator artery diverges from its usual course, and winds round the neck of the sac. Several specimens of this kind are now in my possession; and a case once occurred to me in the Pennsylvania Hospital. I was operating on a woman for femoral hernia, and on introducing my finger to ascertain the seat of stricture, I could distinctly feel the pulsations of an artery lying close to the point of stricture. I was obliged to use extreme caution in proceeding, but by defending the cutting edge of the bistoury till within a short distance of the point, and by nibbling, if I may be allowed the term, rather than cutting, I succeeded in dividing the stricture sufficiently to return the protruded parts without wounding the artery. In this case, the finger was an indispensable guide. The case was interesting on some other accounts, and will be narrated in the sequel.

SECTION III.

ON THE PROPRIETY OF OPENING THE HERNIAL SAC.

Among the important considerations associated with the operations detailed in the preceding section, is the propriety of opening the hernial sac, before making any attempt to return the strangulated parts into the abdominal cavity. There has long existed a difference of opinion on this subject. Among those distinguished surgeons who advocate the practice of opening the sac, Pott, Hey, Astley Cooper, and Samuel Cooper, may be named. Some more modern practitioners entitled to the highest respect for their experience and skill, have considered it proper to dispense with this part of the operation. If the reduction of the hernia can be effected by a division of the stricture without opening the peritoneum, they consider the risks of the operation to be greatly lessened by such a course. Many older authorities are in favour of this course in large and old hernia. Among the advocates, we may mention Petit, Monro, Lawrence, and, more recently, Bransby Cooper.

For my part, I am decidedly in favour of opening the hernial sac, and I never intend to perform the operation without so doing. Differing in this from some of my professional friends whose judgment I highly appreciate, and have often had occasion to prefer to my own, I feel bound to offer my reasons for the practice which is here recommended.

The principal objections to the plan of opening the sac, so far as I can understand them, are as follows:—

In recent cases, the practice is said to be unnecessary, because, from the short duration of the disease, no serious mischief can have been done to the parts, and no evidence exists of mortification of the bowel; then why incur any additional risk of peritoneal inflammation by making an opening through this delicate and susceptible membrane?

If efforts have been made to reduce the contents of the sac by taxis just before proceeding to the operation, why hesitate to effect the same result after the stricture is divided? which may be done without opening the sac.

While the force of these reasons is admitted, they have failed to bring conviction to my mind of the propriety of the course proposed.

When a patient labouring under strangulated hernia has submitted himself to a surgical operation for relief, it becomes the duty of the surgeon carefully to weigh all the circumstances connected with the case, to balance in his own mind the dangers to be encountered, and in the midst of contradictory indications, to choose the lesser evil, and draw forth, if possible, a safe and happy result;—thus giving the confiding sufferer every possible chance for life, by removing the probable causes of danger.

Now it must be familiar to every experienced surgeon that, in cases of strangulated hernia, there may be concealed mischief within the sac, which will certainly cause the death of the patient if not timely removed, and which it is impossible to ascertain until the sac is laid open. It is well understood, that the seat of stricture may be in the hernial sac itself. The incarcerated parts may be returned, while the symptoms of stran-

gulation may go on without the slightest mitigation, and a fatal result will unfold the real character of the case.

The following is an instance which goes to show the truth of this remark; and as I was concerned in the case, with Dr. Joseph P. Nancrede, I have taken the liberty of extracting it from the sixth volume of the Eclectic Repertory, where it was first published.

CASE III.

Seat of strangulation within the sac.

Andrew Patton, a coloured man about thirty years of age, strongly built, and of large stature, having always enjoyed good health, had been subject to a scrotal hernia on the right side for the last five years, but which being well maintained in its situation by a truss, had never occasioned the least inconvenience. On Friday, August 10, while raising his carriage, (he being a coachman,) he made an effort, which was succeeded by a sudden pain in the left groin, but which appears, however, not to have been sufficiently acute to excite alarm, or even to induce him to examine the spot which was the seat of the pain. This occurred about three o'clock in the afternoon. In the evening, as usual, he returned home, complaining merely of fatigue, and went to bed without any examination, although the pain had not abated. At about eleven, however, he was roused by the increase of his sufferings, which were now so violent as to make him cry out; vomiting

and hiccup made their appearance simultaneously, and the pain extending throughout the abdomen, but more particularly below the navel, became excruciating. His sufferings had alarmed him, and medical assistance was requested at about half-past one.

Upon examining and questioning the patient as to the probable causes of his colic, (for thus it appeared to me at first sight,) no satisfactory information could be obtained. After some further investigation, however, he recollected having felt in the afternoon a small lump upon the left groin, and added that his most violent pain had been at this spot. This tumour, about the size of a goose egg, proved upon examination to be a scrotal hernia of the left side, strangulated.

Attempts had been already made by the patient to effect the reduction of the tumour, and I repeated them myself in vain. But finding the tumour very hard, as well as the pulse, I went home in search of my lancets, having previously administered a dose of *ol. ricini*. On my return, however, after keeping the muscles relaxed for some time, the hernia was almost immediately reduced. The patient soon felt relieved, the pain disappeared, not the least vestige of the tumour remained, and I left him dosing.

A couple of hours afterwards, the symptoms of strangulation were renewed, and continued the same as previous to the reduction of the hernia. No evacuation having taken place, a second dose of *ol. ricini* was ordered, but was almost immediately vomited. A third cathartic, which he kept down, produced no effect whatever. It was then deemed necessary to take ten ounces of blood from the arm, which, however, failed to procure any relief. At twelve in the forenoon, no

abatement of the pain could be perceived, although the pulse was softer; but the vomiting and hiccups had disappeared. No passage had yet been procured; a dose of calomel and jalap was therefore prescribed. Having seen him a third time in the afternoon, and no amelioration being visible, the abdomen becoming painful to the touch, and tumefied, and still no evacuation, a second dose of calomel with emollient injections were recommended, and the patient was bled a second time. The same situation manifested itself in the evening, when the patient was again bled for the third time. Although the reduction of the pulse was considerable, yet it procured no relief. The vomitings had occurred twice in the afternoon. Fomentations on the abdomen were ordered with the injections, but with the exception of a little relaxation in the tension of the abdomen, no effect was produced. An infusion of senna was administered, also in vain. I visited him early on the morning of Sunday the 12th, and found that his sufferings had not increased, although he had experienced no relief. He had not slept any during the night. The abdomen continued painful and tumefied, but he complained much more of pain in the groin on the right side than at any other point. No passage. The injections, fomentations, and the infusion of senna were directed to be continued. The pulse had become tense and tremulous.

The case proving obstinate, I requested the advice of my friend and neighbour, Dr. Povall, who agreed in opinion that the symptoms of strangulation most probably arose from a stricture in the hernial sac, that had been reduced with the intestine. It was determined, at his suggestion, to apply a large blister on

the abdomen, and to insist upon the injection of large quantities of warm water, with the hope of overcoming the obstruction which existed. The blister did not produce on the skin or system any effect whatever, and the other remedies made use of were equally ineffectual. A copious bleeding was ordered in the afternoon, owing to the hardness of the pulse. The night from Sunday to Monday was equally restless. On Monday, his situation continuing the same, it was agreed between Dr. P. and myself that a dose of gum gamb. and calomel should be given, and cold water poured on the lower extremities. No effect whatever from either. His sufferings were as great as the day previous. The vomiting and some hiccup had occurred, but gave way to the camphorated mixture, which was now recommended.

On Tuesday morning his pulse was considerably depressed, the tension of the abdomen had subsided, and it was much less painful; but the extremities were cold, accompanied by clammy sweats. The voice had undergone some alteration; constant anxiety and restlessness were also observed. The injections were continued during the day, and a decoction of tobacco was also added. Notwithstanding the treatment, the inflammation maintained its ground. No passage could be procured. Several medical gentlemen saw the patient in the course of this day, and agreed with me in the opinion that very little hope could be entertained. At the suggestion of one of the gentlemen, quicksilver was administered, in the proportion of an ounce, but also in vain. Dr. Parrish was called to see the patient in consultation on Wednesday, and concurred in

opinion with Dr. Povall and myself as to the probable cause of the very dangerous symptoms.

The pulse continued to sink, and, with some remission, when it would rise in an unaccountable manner, gradually lost both its strength and regularity. Vomiting, but more especially the hiccup, became very troublesome; and the least motion produced fresh pains. The camphorated solution was of service in relieving the patient from the hiccup. In this situation, when every remedy had failed, he kept lingering until the night of Thursday to Friday, when he expired—the seventh day of his disease.

I proceeded the next morning to the opening of the body, accompanied by Dr. Povall.

On opening the abdomen, we found the whole mass of the intestinal tube, commencing at the strictured part and extending upwards, distended with air: the vessels of the omentum, as well as those of the mesentery, very much injected with blood, and the greater portion of the intestines bearing evident marks of inflammation. The seat of the disease, however, was confined to the jejunum, which, for the length of twelve inches, had lost its colour, and was in a complete state of sphacelus. A portion of this intestine was confined in the inner portion of the abdominal ring, where the hernial sac formed a stricture round it, which having also participated in the general mortification, was totally disorganized, and could easily be torn away by the nail. So complete had been this adhesion, that when it was ruptured by a very slight effort, a hole in the intestinal canal, about the size of a shilling, was produced. We also noticed another hole near it, of

the same size, having all the appearance of an ulcer. Having cut open the intestine at its most diseased point for a few inches, pus, and a remarkable black appearance on the internal coat, were observed. A remarkable spot about the size of a half dollar attracted our attention. It was situated about the middle of the transverse portion of the colon. It was very evident to us, that the intestines contained in the right side of the abdomen, but more particularly in its lower region, had been the seat of a more extensive and acute inflammation than those situated on the left. The inguinal ring, which was diseased, as we have already noticed, on the left side, had protruded in the abdomen as much as an inch, by the increase of its volume.—*Eclectic Repertory*, vi. p. 531.

But there is still another cause of strangulation which may continue even after the protruded parts are returned into the abdomen, and which the surgeon cannot discover if the sac has not been laid open. The omentum itself may become entwined around a portion of the bowel, causing fatal strangulation. There are several cases of this kind to be found in the books, and Ledran mentions an instance in which a portion of the omentum adhered to the surface of the sac of a crural hernia, so that it formed a kind of bag within a bag, and produced such a narrowing of the neck that the intestine could not be returned without opening the sac, and dividing the omentum.*

These instances present unquestionable evidence of danger and death, which probably might be prevented,

* See *Ledran*—Observations in Surgery. Translated by J. S., Surgeon, p. 190. London, 1758.

if the sac were opened, and the actual seat of stricture made known to the operator.

Again: the return of the mortified portion of bowel or omentum within the abdomen, must be accompanied with great danger; for the moment a part is positively dead, from that moment it becomes extraneous matter, and cannot fail to be a source of irritation and consequent danger to the patient. I am aware of the difficulty of reducing mortified bowel or omentum, in consequence of the adhesion produced by the preceding inflammation; but if the stricture be divided, I believe it may sometimes be done.

The symptoms which denote the existence of mortified bowel or omentum are extremely deceptive, as will be shown in the proper place; and the time required to effect the death of strangulated parts is very various. The force of the stricture, and the peculiarity of the constitution may, in some instances, produce very rapid disorganization.

Hence, it may happen, after a division of the stricture, without opening the sac, that a mortified portion of its contents may be pushed into the cavity of the belly, perhaps without the operator having the slightest apprehension of the real state of the case, which could only be revealed by an exposure of the parts.

Let us now examine the most formidable objection to the practice of opening the sac. It is the danger of peritoneal inflammation, in consequence of forming a communication with the external air.

That peritoneal inflammation is a very dangerous and fatal disease, is a fact well known to every extensive practitioner. The physician may meet with it occasionally in its most aggravated form, without any

connexion with a wound or an external injury. I consider idiopathic peritonitis as a rare disease, when unconnected with puerperal fever. I have met with it in a few instances in young persons, where, for several days, its approach has been most insidious, being marked by a bending of the body forward, and where dissection has revealed evidence of violent inflammation with sero-purulent effusion. Its occurrence in puerperal fever is familiar to all. Here we find the disease dependent on some obscure constitutional cause, predisposing the system to violent inflammatory action in a particular part.

“Causa latet—vis est notissima.”

I exclude from this view the various modifications of diseased action which may arise in the progress of fevers, &c. and which constitute the mere sequel of acute forms of disease.

Let us now take up the subject in a surgical point of view, and inquire whether peritoneal inflammation is as frequent as might be theoretically supposed, even in cases in which the peritoneum is opened by accident or intention.

May I not hazard the opinion, that when there exists none of those unseen and unknown causes of constitutional predisposition to peritoneal inflammation to which I have referred, this membrane may be opened with less risk to the life of the patient than is generally supposed. Take, for example, the operation of tapping in ascites. This is of very frequent occurrence, and here the peritoneum is punctured. I have seen leakage through the wound take place for seve-

ral days without injury to the patient, and I would appeal to the experience of the medical profession, as to the frequency of inflammation and death, as a direct consequence of paracentesis abdominis. I may have seen inflammation, as a very rare occurrence, after this operation, but I believe I may safely assert, that I have never known a case resulting in death, from tapping the abdomen in dropsy.

I have known an instance of a small shot entering the abdomen and penetrating an intestine, to be followed, soon after, by a copious stool of fresh blood from the bowels, and yet the patient recovered, without any serious symptoms.

Those surgeons who are acquainted with surgical practice as it existed many years ago, must be familiar with the views then entertained of the dangers resulting from openings into the cavities of the joints in luxations and fractures, and which were founded on the same reasoning which now occasions the dread of peritoneal inflammation, when a cavity is exposed. The numerous recoveries from injuries of this class, under the present improved mode of practice, induce us to believe that the anticipation of dreadful results often led to unnecessary mutilation.

From the views now unfolded, I should hope that no young and inexperienced practitioner would presume recklessly to institute operations involving the peritoneum, and plead me as his authority. My object is simply to show, that in endeavouring to balance the dangers of omitting to open the hernial sac, and the dangers consequent upon the opening, I have long since arrived at the settled conclusion, that to open the hernial sac, and thus make a full exposure of its

contents, is the lesser evil, and the practice most likely to conduce to the welfare of the patient. Even if inflammation should follow after such an operation, may not the injury inflicted on the bowel by severe strangulation be taken into the account, as at least one of the prominent causes, inasmuch as we know that parts are frequently returned into the abdomen, in a state of high inflammation?

SECTION IV.

DIFFICULTIES OF OPENING THE HERNIAL SAC.

It might be supposed, *a priori*, that the hernial sac could be opened without the slightest difficulty, after having been fairly brought into view by careful dissection. That this is the fact, is fully admitted in all those cases where the hernia is large, and where the sac, as is usual, contains a considerable quantity of serous fluid.

It is said that, by careful examination, you may feel, through the sac, the cleft between the sides of the protruded bowel. I can admit the possibility of such a case, provided it was left to the choice of the surgeon to direct the manner in which the descent of strangulated parts shall take place; but if a portion of omentum, for example, should be involved in the mischief, and should be found in the anterior part of the sac, covering the intestine, would it not prove somewhat of a barrier while searching for this cleft? The effusion of lymph which we often find as the result of inflammation must cause very considerable derangement in

the natural situations of the parts, and thus increase the obscurity. If these remarks apply to a hernia of large size, with what increased force do they bear upon a very small portion, or knuckle of bowel, especially in femoral hernia! Here, it is utterly impossible to distinguish any cleft between the sides of the intestine.

It is said that the blood-vessels of the intestine, and its smooth, polished surface distinguish it from the hernial sac, which has not those blood-vessels, which is rather rough and cellular on its surface, and which is always connected with the surrounding parts. After some experience in this matter, I acknowledge myself unable to draw these nice distinctions in living structures, sometimes not inconsiderably altered by diseased action. Having often found difficulty in distinguishing between sac and intestine, and felt the vast importance of avoiding the danger of inflicting a wound on the latter while opening the former, I am willing to communicate my experience on the subject. Let it be remembered that, especially in some cases where a small portion only of bowel is incarcerated, there is no fluid in the hernial sac, and the parts are so identified, that to make a proper discrimination is a very difficult task.

CASE IV.

Hernial Sac concealed by a coagulum of blood.

3d mo. 10th, 1830.—W. H., a native of the West Indies, aged about 38 years, was admitted into the Pennsylvania Hospital about 8 o'clock, P. M.

The following is the history of the case.

The patient had been affected with a femoral hernia for some years, and for the last two years had worn a truss. A few days previous to his attack, his truss was stolen from him, since which time he had suffered more or less pain in his rupture. About 7 o'clock, on the morning of his admission, he was seized with pain and vomiting, and was unable to return the bowel. In the afternoon, he was visited by my friend, Dr. Atlee, who directed for him free venesection and a tobacco enema. After this, I visited him with Dr. Atlee, and advised his being sent to the Hospital, to which the patient consented. For several hours previous to his arrival at the Hospital he had been affected with singultus.

9 P. M. I met my colleagues, Drs. Hewson and Hartshorne, and on examining the case, the operation was concluded on at once. Sixty drops of laudanum were directed, after which, about twenty minutes were spent in preparing for the operation.

The tumour was unusually large for a femoral hernia, and of an oval figure, its longest diameter being across the groin.

I made a crucial incision over the tumour, pursuing the dissection in the usual manner, until I arrived at a membrane, which I supposed to be the sac: I thought it was remarkably thick. After repeated trials, I failed to pinch up the membrane in the usual way, owing to its firmness and thickness. I therefore cut it very cautiously with the scalpel, being careful not to penetrate it.

After paring off a small portion in this manner, I was enabled to take hold of a surrounding portion

with a forceps, and to continue cutting obliquely upward until I had removed a considerable portion of the membrane. Underneath this we discovered a layer of coagulated blood, of a very dark colour.

The question now arose, whether I had penetrated the sac, and whether the coagulum just noticed was thrown out around the bowel and had been adherent to the internal surface of the sac. This might have occurred, provided the sac contained no fluid, which sometimes happens. While this question was under discussion, I pressed my finger firmly upon the coagulum, and thought I could distinctly discover fluctuation below. On examination, my colleagues were of the same opinion, and we decided that the sac was still undivided.

On scraping away the coagulum, the sac was distinctly seen below. Dr. Hartshorne succeeded in getting a portion of it between his fingers, and I cut through it in the usual manner. On opening the sac, a small quantity of dark, bloody fluid escaped. I now dilated the opening freely, with the blunt-pointed bistoury, and passing up my finger, exposed a portion of the incarcerated bowel. The bowel was but little altered from its natural appearance. The seat of stricture was at Gimbernath's ligament; this was distinctly felt with the index finger of the left hand; the blunt-pointed bistoury was passed up, the stricture was divided, and the intestine was reduced without difficulty. The wound was closed by the interrupted suture, and the patient placed in bed, with directions to have administered a dose of laudanum if he became restless, and if fever ensued, blood to be abstracted. Barley-water ordered for drink and nutriment.

11th, morning.—Patient had passed a good night. Pulse 68 strokes in the minute. Symptoms of strangulation ceased immediately after the operation. Directed ol. ricini $\bar{\text{ss}}$. every three hours, until the bowels are moved. Continue barley-water. *Evening*. Bowels not moved. Pulse 85. Directed oleaginous mixture every two hours, until it operates.

12th.—Pulse 80. Patient rested well during the night; had two copious evacuations. Continue the barley-water, and the oleaginous mixture.

13th.—Pulse 80. Patient has taken $\bar{\text{z}}$ i. of oil since yesterday; has had but one discharge from the bowels. Directed a diet of oat-meal gruel, well sweetened. The wound has united sufficiently to allow the ligatures to be cut out. Continue the oleaginous mixture.

14th.—Pulse 72. The bowels have been opened once since the last visit. Ordered to continue the oleaginous mixture.

15th.—Three stools have passed since the last report. The wound looks well. Pulse 68.

19th.—The wound is now cicatrizing. The pulse and tongue present a natural appearance, and the bowels are sufficiently opened.

22d.—The patient placed on an improved diet. Ordered chicken broth, toast, butter, &c.

4th mo. 6th.—Discharged, cured.

CASE V.

Distinction between Sac and Intestine confused by Gangrene.

9th mo. 29, 1822.—I attended this evening, with my colleagues, at the Pennsylvania Hospital, in an interesting case of strangulated femoral hernia, in which Dr. Price performed the operation. The tumour was unusually small. In dissecting down through the integuments and fasciæ, the operator readily reached what we all supposed to be the hernial sac. The parts were in an evident state of sphacelation, and the most prominent part of the intestine, as far as we could judge by candle-light, was of an ash-gray colour.

There was great difficulty in distinguishing between sac and intestine. At Dr. Hartshorne's suggestion, the parts were pinched up between the fingers, and we perceived—*very evidently, as we thought*—the sac, distinct from the intestine. We could feel fluctuation in the part, as if it contained a fluid. By our advice, Dr. Price cut through the parts contained between his fingers, and opened at once into—*the intestine*—the contents of which escaped.

On a more minute examination, we discovered that the part divided was the anterior portion of the intestine, which was in a state of mortification, and was very flaccid. The deception was occasioned by the flaccid state of the dead bowel, contrasted with the firm and thickened living portion around it, giving the idea of a thin membrane, covering a firmer one. It is

true that no harm was done by the opening in this case, but it exhibits a striking example of the difficulty of distinguishing between the sac and intestine, under particular circumstances.

The case was, in every respect, unpromising; the expression of the countenance was unpleasant, but neither the pulse, skin, or tongue gave evidence of mortification.

CASE VI.

Hernial Sac at first mistaken for Intestine.

11th mo. 25th, 1818.—I was called, this morning, by my friend, Dr. George B. Wood, to visit with him a female domestic, who lived in the family of a respectable apothecary, and who was labouring under strangulated femoral hernia.

She was attacked with symptoms of strangulation, on the 21st inst. and was supposed, by her friends, to be labouring under bilious colic. The apothecary had prescribed several articles for her relief, all of which were rejected by the stomach. Soon after the attack, she had one discharge from the bowels; after which they were confined, notwithstanding the frequent use of injections. A blister had also been applied to the abdomen.

On the 25th, Dr. Wood was called to see her, and, from her symptoms, at once suspected strangulated hernia. She was cold and nearly pulseless. The doctor requested that her female attendants should examine her groins; from motives of false delicacy, the

patient resisted, and several hours elapsed before the necessary examination was made; it was then ascertained that she had a small tumour in the groin, and, at the request of Dr. Wood, I attended in consultation.

I found the patient with a cold skin; a very feeble pulse; the tongue moist and slightly furred; the abdomen tumid, and tender to the touch; the countenance sunken; and the patient complaining very much of general distress and wretchedness. The tumour was situated in the right groin; it was small, and of an oval figure.

The symptoms were so extremely unfavourable, that I was doubtful of the propriety of an operation, but in order to give the poor woman every chance, Drs. Hewson and Hartshorne were called in consultation, at my request. They advised against the operation; the patient appearing to be in articulo mortis. We left her for the night, advising anodynes to be given to lessen her distress. One of my pupils remained with her.

26th.—We met in consultation in the morning, and, to our great surprise, the system had reacted considerably. Her skin was warm, and her pulse, though very feeble, had evidently improved. The pupil reported that she had been delirious in the night, rose from her bed, and insisted upon walking to the fire for some minutes, and then walked back to her bed without difficulty. The favourable change in the patient's symptoms induced us to recommend the operation, which I performed, assisted by Drs. Hewson, Hartshorne, Harlan, and Wood, in the presence of several of my pupils.

A crucial incision was made over the tumour, and

the fasciæ divided by the director and bistoury, in the usual manner, until I thought I had opened the sac and exposed a portion of intestine, that appeared to be adhering to it. I passed my finger down by the side of the supposed bowel, but could not feel the ligamentary edge which was the seat of stricture. My friends, Hewson and Hartshorne also examined, and were equally unsuccessful.

Dr. Hewson now suggested that the sac was still unopened, and on close investigation this was found to be the case. The part which we had supposed to be intestine was the sac, and, by careful examination, the strangulated contents could be felt within it. I succeeded in making an opening very cautiously in the sac. *No fluid was contained in it*, which circumstance rendered the obscurity so great. A portion of omentum was found in a state of mortification, and a small fold of bowel on the side next the omentum had an ash-coloured slough. The cadaverous smell was observable immediately on opening the sac. The stricture was divided without difficulty, and the patient bore the operation very well.

She was put to bed; a soft poultice was applied to the wound, (a piece of gauze intervening,) and wine was directed in small quantities. I called in about an hour after the operation, and found her complaining of most severe pain in the lumbar region. Her abdomen, which was tympanitic before the operation, appeared to have increased in size. I was about to introduce a tube into the colon, for the purpose of extracting the air by the syringe, when she was seized with vomiting, and the contents of her stomach were discharged over the bed-clothes and floor. After this, she called to

her daughter, and, in an audible voice, directed her to go down stairs and bring up a cloth to wipe the floor; and in less than five minutes after giving the direction—she expired.

CASE VII.

Inguinal Hernia—Stricture in the Sac—Adhesion of Omentum.

5th mo. 13th 1816.—I was called this day in consultation with Drs. Betton and Moore, to visit a labouring man, at Peter Robinson's mill, Roxborough. The patient had a small strangulated rupture on the left side. It could scarcely be called scrotal, but was rather a bubonocoele. He had been bled very freely, and various unsuccessful efforts had been made to relieve him by Drs. Betton and Moore. The strangulation had existed between seventy and eighty hours.

As we were all united in opinion that no time was to be lost, and as the patient consented to the operation, a dose of laudanum was exhibited, and, with the assistance of my medical friends, I proceeded to perform it.

After making the usual incision through the integuments, and taking up several small arteries, I came down to the hernial sac. It was found to be thickened, and contained no fluid. Here a difficulty arose; and much care was required to avoid wounding the parts within the sac. It was soon ascertained, that the patient had an irreducible omental hernia, closely adher-

ing to the sac. It required no little time and great care to separate the adhesion and expose the omentum. After this was accomplished, no intestine was apparent, although the symptoms of strangulated bowel were clearly marked. It was soon discovered that there was a small but very tight stricture in the hernial sac itself, not far from the abdominal ring. This was divided by the aid of a small director and bistoury. It was not until this was accomplished, and the parts were unbound, that the real character of the case was made to appear. The liberated omentum was laid on one side, and a small portion of strangulated intestine was exposed. But the difficulty had not terminated even now, for the intestine was still bound by a stricture at the abdominal ring, which I divided with the blunt-pointed bistoury and director. The intestine was inflamed, but not gangrenous. The omentum was of a dark colour. I now reduced the intestine without difficulty, and it was concluded that the omentum should remain undisturbed. The wound was dressed, and the patient put to bed. I left him under the care of his medical attendants. He recovered most happily, and called on me, not long afterwards, in the city.

It occasionally happens that the inflammation which occurs in the strangulated parts, produces adhesions between the contents of the hernial sac, more particularly in the vicinity of the stricture, and between the folds of the intestine, which may prove a source of difficulty in the operation. The following case is an instance of this kind.

CASE VII.

Strangulated Ventro-inguinal Hernia—Adherent Intestine—Cure.

8th mo. 10th, 1834. I was called this afternoon by Dr. George Uhler, to see M. G. a patient about seventy-two years old, who has been under the care of Dr. Uhler for about one year, with hydrothorax, and occasionally slight ascites, with anasarca of the legs.

M. has been subject to hernia for twenty years, but was always able to reduce it, until last night about 11 o'clock, when it became strangulated, and caused extreme pain. Dr. Uhler was called to see him in the night. Knowing the general condition of the patient, he very properly declined the vigorous treatment sometimes adopted. He gave mild injections, one dose of calomel and opium, and applied ice to the tumour. The patient had two evacuations per anum soon after the strangulation took place.

The tumour was on the left side—not very large—it scarcely reached into the scrotum. The spermatic cord could be distinctly felt in front of the tumour.

As the symptoms of strangulation were very clearly marked, and urgent, it was my decided opinion, and also Dr. Uhler's, that the patient would be subjected to less risk from the operation than from active remedies, which are at best uncertain; and after stating the case fairly and fully to himself and family, and giving him an opiate, he was placed on the table, and I proceeded to the operation, assisted by Dr. Uhler and my pupil Thomas, now Dr. Yardley.

Several small vessels were divided and secured in passing through the integuments. I came down upon the sac in the usual way, and distinctly felt a fluid under my finger; but I have seldom operated on a case in which the sac was so much thickened. However, I cautiously opened it, and brought the strangulated part into view. It was intestine highly inflamed and partially covered with a considerable portion of fresh formed lymph, which I carefully removed.

I felt the stricture and divided it cautiously, with the blunt-pointed bistoury, directly upwards, so that I passed my finger by the side of the bowel. But, at this stage of the operation, I was assailed by unusual difficulties in consequence of the universal adhesion of the intestine round the ring. I was compelled to dilate more largely on this account, and, by means of my finger, I detached the bowel all around, and endeavoured to separate the adhesions in the duplicature of the intestine itself: it was then introduced into the cavity of the abdomen. Just at this moment, a small quantity of yellow serum escaped from the wound, which we concluded was a dropsical fluid. The patient was returned to bed—his head was raised high, a large bolster, doubled, was placed under his hams, and he was directed barley-water, &c.

He bore the operation as well as could be expected. As he seemed inclined to sleep, quietness was directed, and the attendants were ordered, if he became restless, to give him thirty drops of laudanum every six hours.

11th, morning, 11 o'clock. The patient has passed an easy night; has had some singultus, but no vomiting, and has passed no flatus. His abdomen is rather tender on pressure but is not tense. Tongue moist,

and slightly furred. Pulse 72, full and soft. Countenance natural. Directed ol. ricini $\bar{3}$ ss. to be taken every four hours until the bowels are opened; also, tinc. opii gtt. xxx. every six hours, if restless; and for diet, barley-water, rennet whey, molasses and water, &c.

Evening, 7 o'clock. The patient complains of considerable pain in the abdomen. He has taken $\bar{5}$ ij. of the oil, without having any evacuation. No flatus has passed; there has been frequent vomiting and singultus. There is no tension of the abdomen, but a slight soreness on pressure. Pulse 72, rather full and soft. Tongue moist and very little furred. Countenance natural. Directed ol. ricini $\bar{3}$ ss. every three hours, with occasional injections of flaxseed tea. Diet and drinks continued as before.

12th, *morning*, 10 o'clock. The patient has been restless through the night, although he has taken thirty drops of laudanum every six hours. He has taken two ounces of castor oil since I last saw him, and has received four injections, yet there has been no discharge from his bowels, either of feces or flatus. Singultus continues frequent. The abdomen is considerably tense, and sore on pressure, with a burning sensation in the bowels. Pulse 80. Tongue moist, and very little furred. Countenance good. Vomiting frequent. Directed one-fourth of a Seidlitz powder to be taken every quarter of an hour, and the injections to be continued; the laudanum to be omitted, and the same diet persevered in. *Evening*, 6 o'clock. The patient has had several discharges from the bowels, and is quite relieved of the vomiting and singultus. The tension of the abdomen has subsided, the burning sensation has ceased, and the

soreness is much diminished. He has passed a comfortable afternoon. Pulse 75, and natural. Countenance natural, composed. Tongue moist and nearly clean. Directed the same quantity of Seidlitz powder to be taken every hour, and the diet to be continued.

13th, *morning*, 8 o'clock. The patient has rested comfortably through the night, and has had two discharges from the bowels. Pulse, tongue, and countenance natural. He is in every respect in the most favourable condition. Directed the Seidlitz powder every two hours. Diet continued.

14th, *morning*, 11 o'clock. The patient has passed a pleasant night. He is in every respect free from any apparent disease. The wound has nearly healed by the first intention. There is no suppuration of the part. The bowels are free. Directed the Seidlitz powder every four hours.

15th, 12 o'clock. The patient's bowels have been moved freely and naturally. He remains free from any unpleasant symptom.

This patient recovered, although he had, during convalescence, an attack of intermittent fever, which was then prevalent in his neighbourhood; but he had approached the natural limits of human life, and died a few months after the operation.

Thickening of the intestine, and an effusion of lymph upon its surface without adhesions, are other results of inflammation which deserve notice. In these cases it is generally necessary to enlarge the first incision at the ring, to allow the bowel to pass up. The lymph should be cautiously removed by the fingers and the handle of the scalpel. Cutting instruments should be

carefully avoided in performing this part of the operation, as in the following case.

CASE VIII.

Inguinal Hernia—Strangulated, dark, and inflamed Intestine.

4th mo. 9th, 1821. D. W., a man of colour, about middle age, was admitted into the Pennsylvania Hospital after 10 o'clock at night.

He had been subject to inguinal hernia on the right side for several years, and strangulation had occasionally taken place.

On this occasion the bowel had been strangulated, as far as we could ascertain, between thirty-six and forty-eight hours. The strangulation occurred in the act of vomiting.

He had been visited this afternoon by Dr. Samuel Tucker, who, on discovering the nature of the case, called on me, and requested me to take charge of it. No attempt at reduction had been made. When examined, the tumour was found rather large, and somewhat tender to the touch. There was but little tenderness of the abdomen; less, (according to the account given by the patient,) than there had been soon after the descent. The tongue was furred, but not dark coloured. The pulse was not active or tense. He had no stool since the descent, had vomited after drinking, but sometimes retained fluids for several hours on his stomach.

My colleagues, Drs. Hartshorne and Hewson, and my friend Dr. Tucker, consulted on the case. Some slight attempts were made at the taxis, and a purgative enema was given, which operated on the rectum. But, after stating the case to the patient, and obtaining his consent, it was concluded to proceed at once to the operation. Eighty drops of laudanum were given, and a little before twelve o'clock, he was placed on the operating table.

On cutting down through the integuments and laying bare the sac, it appeared to be distended with fluid. On opening it in my usual way, with the forceps and lancet, a bloody-coloured fluid issued out. I now enlarged the orifice freely, and laid bare the contents of the sac. It contained a portion of bowel, without omentum. The intestine was *very dark coloured*, but there were no adhesions, and the fluid in the sac *was destitute of the cadaverous smell*. The intestine, moreover, was much thickened by inflammation, and was coated with a large portion of effused lymph, particularly at its lower and most dependent part. I removed a part of this lymph with my fingers and the handle of the scalpel. The bowel was also full of what I supposed to be liquid feces. The stricture was at the abdominal ring. I divided it, in part, upward, with the blunt-pointed bistoury, and attempted gently to introduce the prolapsed bowel, as I was desirous of avoiding any unnecessary enlargement of the ring. But as I was still more anxious to avoid any violence to the intestine in its inflamed state, I was under the necessity of enlarging the opening with the bistoury, and I then returned the bowel.

The patient was placed on his back in bed, with his

knees elevated, and a pillow under his hams; the wound being previously drawn together by three stitches of the interrupted suture, and adhesive strips. He was directed to take barley-water, &c.

10th, *morning*. The House-Surgeon sat up with the patient, and reports that he passed a most excellent night, and slept very well. I found him better than I had reason to anticipate. His tongue is yet coated with considerable yellow fur. His pulse remarkably tranquil, considering all the circumstances. Directed a table-spoonful of castor oil every three hours until the bowels are opened.

This patient recovered completely in a short time.

SECTION VI.

SYMPTOMS OF STRANGULATION AFTER REDUCTION BY TAXIS.

In the section on the propriety of opening the hernial sac, cases have been referred to, in which symptoms of strangulation continued after reduction, and terminated in the death of the patient. The issue of these cases is ascribed to mechanical obstruction within the sac, from a stricture at its neck, entanglement of the omentum around the bowel, &c.

It is now intended to show, that a train of the most alarming symptoms may continue for days after reduction, and yet may yield to appropriate medical treatment.

The remedy upon which I have placed chief reliance in these cases is mercury, introduced into the system

in extremely minute portions. Calomel, in the dose of one quarter or one sixth of a grain, given every one or two hours, is the form I would recommend.

The efficacy of mercury administered according to this method, has been tested by ample experience in the treatment of many diseases. Dr. Ayre, in his work on Marasmus, has thrown much light on this practice; and the former Dr. Edward Miller, of New York, who died in 1791, has strongly recommended the practice in an essay entitled "Remarks on the Cholera and Bilious Diarrhœa of Infants." It is now much employed by many physicians of Philadelphia, and is found applicable to a great variety of diseases in which calomel was formerly employed in larger doses.

I have carried out this practice to the treatment of certain cases of strangulated hernia, with obvious advantage.

I shall not attempt to discuss at large the *modus operandi* of this remedy. It is well known that calomel, even in very small portions, has the power of correcting functional derangement of the liver, and of exciting the flow of yellow, healthy bile. That bile of this description is the most natural excitant of the bowels, and is admirably calculated to promote steady and healthful peristaltic action, it is presumed will be generally admitted.

The introduction of calomel in such minute portions as not to offend the stomach, or to produce any constitutional irritation, is peculiarly appropriate in diseases where the stomach is irritable, and in none more so than in strangulated hernia. Large doses of calomel excite the liver and alimentary canal to increased action, and thus

transcend that medium which it is so desirable to maintain: hence, while powerful doses are obviously injurious in cases of recent strangulation, the accumulated effect of minute portions, frequently repeated, may be attained; while at the same time the irritability of the stomach is allayed.

The following cases will illustrate the beneficial effects of this practice.

CASE IX.

Hernia—Reduction by Taxis—Symptoms continued— Stercoracious Vomiting—Recovery.

9th mo. 18th, 1835. Was called about 12 o'clock, M. to see J. L., a respectable old gentleman residing in Green street, in consultation with Dr. Janney. The patient is a tall, spare man, of delicate constitution, aged about sixty-eight years. He had been afflicted with inguinal hernia of the left side, for between forty and fifty years, during which time he had worn a truss. Within the past few years, he has had several attacks of strangulation. Dr. Janney has attended him, and has succeeded in reducing the parts by taxis, after venesection and a full dose of opium.

The present attack commenced on the night of the 13th inst.; he awoke from sleep, complaining of pain in the groin, and discovered that the hernia was strangulated. He went down stairs for the purpose of giving himself an injection, and just before receiving it, had a discharge from his bowels, in the privy, without producing any change in the tumour.

He then took grs. ij. of sulp. morph. which composed him for the night, and early the next morning he was enabled to reduce the bowel. The symptoms of strangulation, pain in the abdomen, vomiting, &c. still continued, and on the 15th Dr. Janney was called. He found the patient affected with copious mucous vomiting, obstinate constipation, tympanitic and tender abdomen. On examining the groin, he could readily pass the index finger through the internal ring, and there was not the slightest appearance of a tumour externally, so that he was convinced that the parts were returned. He directed v.s.—and calomel gr. ss. every hour, with carb. sodæ, and aqua menth. On the 16th, the calomel was suspended for a short time, and calcined magnesia directed in small and frequent doses; this was rejected by the stomach; ol. ricini was also tried, but was vomited up; the calomel was then resumed, and injections of salt and flaxseed tea were given every three hours.

On the 17th he was attacked with stercoracious vomiting; the abdomen was tender to the touch; the bowels, constipated. The calomel had been continued. He was cupped on the abdomen, and bled from the arm with relief—blood not sisy. The Doctor remarked that the vomiting was first, mucous; secondly, dark-green; thirdly, brown; and fourthly, decidedly stercoracious.

On the 18th, I saw the patient in consultation. His bowels were still confined, nothing having passed since the night of the 13th; the stomach very irritable, he vomited stercoracious matter twice while we were in the room; pulse 112 in the minute, and irregular; tongue brown and moist; abdomen slightly tympanitic, and bears pressure very well. I could readily pass my finger up to the internal ring, the spermatic cord evident;

skin warm and natural ; respiration easy ; countenance not distressed ; position in bed natural. Directed a strong decoction of senna to be given as an enema every three hours, and a poultice of stramonium leaves to the abdomen.

Evening. One discharge followed injection ; it was not preserved, but probably consisted of injecting matter only ; ring still more relaxed ; vomited but once since our last visit. Directed calomel powder gr. $\frac{1}{4}$ each, one to be taken every hour ; and an injection of jalap \mathfrak{zj} . to a pint of water, every three hours. Stramonium leaves continued.

19th. Bowels have not been moved ; sleep light and disturbed ; vomiting less frequent, but still stercoracious ; pulse 135, and feeble ; skin warm ; tongue brown, moist, and mucous, resembling very much the mucous tongue in typhus fever, which I have always found to be associated with great danger ; abdomen slightly tympanitic, abdominal muscles seemed relaxed, the folds of the intestines can be distinctly traced underneath the muscles ; ring still more dilated, the finger can be passed an inch within the abdomen. Has taken calomel powders regularly through the night, and at his own request, has been placed in a warm bath ; has had three injections of jalap, without effect. Same treatment continued, with the addition of a powerful injection to be thrown in through a tube passed beyond the sigmoid flexure of the colon.

Evening. Dr. Janney and my son succeeded in passing a large gum elastic tube about thirteen inches up the bowel, through which $\mathfrak{z}ijj$. of jalap, suspended in a large quantity of flaxseed tea, was injected. During their visit, about 12 o'clock, the hernia descended into the sac, and was readily returned. Has passed several por-

tions of the injection without fœces, stercoracious vomiting continues, pulse 112. He says there is a slight rumbling in the bowels, and that he feels rather better. Continued small doses of calomel, and poultice of stramonium leaves.

20th. Patient thinks that he cast up the fluids which have been injected per anum; says he has passed flatus, and believes his bowels have been moved; has had several dark-coloured evacuations, which we suspected to be nothing more than coloured mucus. Stercoracious vomiting continues unabated; pulse 128; skin warm; slept at intervals through the night; says he feels rather more comfortable; rises from bed with ease; slight tenderness of the abdomen. Calomel powders continued. Directed warm bath, an injection containing ten drops of croton oil into the rectum, and another injection of jalap by the tube into the colon.

Evening. Has had no discharge, though there is evidently more motion in the bowels, pulse 120, expression of countenance more lively; has taken portions of chicken-water through the day, which he relished; asked for boiled meat; thinks his strength is improving. Had an injection into the colon of ʒss. of jalap suspended in mucilage. Continue powders. Directed an anodyne enema at bed time.

21st. Patient much better. We were informed that soon after we left him on the preceding evening, he had a copious bilious discharge, which was preceded by considerable rumbling in the bowels, and was followed by several more in the course of the night. We inspected the discharges, and were fully satisfied that they were feculent. Has had no vomiting since the bowels were opened, slight ptyalism was observable, pulse calm and

natural, tongue moist and brown, probably coloured by tobacco, which he has been chewing this morning for the first time during his illness ; has no pain, feels an appetite. He took an anodyne enema, and slept comfortably through the night. We suspended medicine, and directed mild nutritious drinks.

22d. Still improving—had a copious stool in the course of yesterday, and one this morning; abdomen perfectly flaccid; suffers no pain; dressed himself and went down stairs yesterday; ring contracted to its usual dimensions. Directed a tea-spoonful of magnes. calc. every three hours until it operates.

23d. Medicine has operated several times, feels quite well, except that he is weak. Convalescent.

27th. Feels himself quite well, is dressed and walking about, and has resumed his usual habits.

Remarks.

This case affords ample room for reflection and remark. In it we are presented with a train of the most dangerous symptoms, especially stercoracious vomiting, which continued for several days ; and though the patient was an old man of delicate constitution, yet he finally recovered.

In reviewing the practice pursued, I am disposed to believe, that the minute doses of calomel had an important agency in the cure.

The steady application of stramonium leaves over the whole abdomen, combined with the use of powerful injections, as used in a case reported by Dr. Condie, hereafter to be detailed, although it is derived from an "African colic doctor," is rational and worthy of imitation. Every practitioner is familiar with the dilating

power of the extract of stramonium over the iris, and in this case the poultice certainly did appear to dilate the abdominal ring.

It will be noticed, that this patient had been relieved several times from strangulated bowel, by exhibiting a large dose of opium after the use of the lancet. Dr. Janney has related to me several instances of remarkable success from this plan, which has occurred in his practice. He administers from 3 to 4 grs. of opium at one dose, and considers it very important that a large dose should be given at a time, instead of giving it in small portions, as is frequently done. Should a fair case of recent strangulation present itself, I should pursue this course, with the addition of a poultice of stramonium leaves, before proceeding to the operation.

The following case, which has been kindly furnished me by Dr. J. Rodman Paul, bears a striking analogy to the preceding.

CASE X.

On the 12th of November, 1833, Dr. Neill requested me to accompany him to visit Mr. Steinhaur, a baker, residing in South Second street, who was labouring under strangulated inguinal hernia of the right side. Various means for its reduction had been resorted to without success, and the pain which the patient experienced, together with the incessant vomiting, induced us to propose an immediate performance of an operation, should another effort of taxis prove unavailing. Fortunately, in this attempt we succeeded; the bowel

was returned, and we were enabled to push the finger covered by integument, through the abdominal canal and rings into the cavity of the abdomen. In this condition we left him, auguring a different state of things at our next visit. But we were disappointed, the vomiting continued, and the bowels remained obstinately constipated; purgatives were either rejected or produced no effect; injections into the colon through a gum elastic tube were attended by no better result. This case reminded me strongly of one that came under my care when a resident at the Pennsylvania Hospital. It was that of a coloured man who was operated on for strangulated hernia by Dr. Parrish, and in which the symptoms continued *unrelieved after the operation*, until the gums were touched by the use of small doses of calomel. The same plan was now pursued in Steinhaur's case, and with the same happy result; for as soon as the peculiar effect of the mercury was produced, the constipation yielded, and the vomiting ceased, it being ten days from the commencement of the attack.

SECTION VII.

SYMPTOMS OF STRANGULATION AFTER OPERATION.

Even after the surgeon has performed the operation for strangulated hernia to his entire satisfaction, he sometimes meets with disappointment. The contents of the sac may be exposed, and may present a promising appearance, the stricture may be liberated, and the parts returned without difficulty into the abdo-

men, yet day after day may pass over, without any improvement in the condition of the patient. From some unknown cause the obstruction in the bowels is kept up, and death is threatened if relief is not afforded.

The following case affords a striking instance of this kind:

CASE XI.

Scrotal Hernia—Symptoms of Strangulation after operation—Cure.

11th mo. 12th, 1825. W. C., an old coloured man, was admitted this morning into the Pennsylvania Hospital. He has been afflicted for many years with a large scrotal hernia of the right side, and has had several attacks of strangulation, but the parts have always been returned without an operation. About 11 o'clock last night the hernia became again strangulated.

On the present occasion, the warm bath, the tobacco injection, bleeding ad deliquium, cold applications, &c. were tried without effect. An opiate was then given, the operation was proposed, and the patient consented.

His stomach was irritable, and he vomited violently as he was carried to the operating room. His abdomen was very tumid and tender to the touch, as was also the tumour. About 8 o'clock in the evening, assisted by my friend and colleague Dr. Hewson, and in the presence of the class of students, and many professional visitors, I proceeded to the operation; the patient having previously taken three grains of opium.

I made a free incision, commencing above the external ring, and extending nearly to the bottom of the scrotum, then dissected down to the sac, and laid it open in the usual manner. At the external ring a firm stricture was detected, which was carefully divided with the blunt bistoury, until I could pass the finger by the side of the bowel into the abdomen.

Just at this moment a most unpleasant circumstance occurred—the patient was seized with violent vomiting. Notwithstanding my efforts to prevent it, a portion of intestine considerably larger than that which was involved in the stricture, was forced out of the abdomen. The straining and violent bearing-down efforts were such, that I could not return the parts until I had dilated the ring more freely; even then it was with the greatest difficulty that I succeeded at all. After the reduction, a branch of the external pudic artery, which bled considerably, was secured by a ligature.

The patient complained greatly during the operation, and on every attempt at reduction, he cried out, referring the pain to the umbilicus.

The dressing being completed, he was placed in bed with his limbs supported on the angular box and pillow. The belly continued tense, painful on pressure, hard, and tympanitic. He took two grains of opium at half past 9 o'clock, one grain at half past 12, and another at about three in the morning; the last was rejected. He was ordered to take no other drink or nutriment than barley-water acidulated with lemon-juice.

13th. The patient had several slight attacks of hiccough after the operation, but has passed a quiet night, dozing frequently. Pulse 80, skin nearly natural, tongue furred;

he has passed neither flatus nor feces. He complains, occasionally, of a sharp pain around the umbilicus. The abdomen is still tense and tympanitic. Ordered ol. ricini $\bar{5}$ ss. every two hours until purged; also opii. gr. j. every four hours, if restless. Regimen continued. *Evening.* Pulse 80, full and soft; abdomen less tender to the touch; stomach retentive. The patient is disposed to sleep. He has occasionally very slight singultus. He has taken about an ounce of the oil, but seems to suffer for want of a free discharge from the bowels. An injection afforded partial relief. Dr. Parrish ordered injections of warm water to be thrown up through a large flexible catheter, and some fecal matter and flatus were thus brought away. Dry syringing with the same instrument was then employed, with some relief to the flatulent distension. He has passed his urine freely. Ordered to continue the oil, and also the dry syringing, if necessary.

14th. The patient took last night a dose of opium, in consequence of pain in the abdomen, and not being relieved, warm fomentations were applied. The abdomen is still tense and tender; pulse 80; tongue furred and moist. He seems disposed to doze; some flatus has been passed this morning. Ordered injections of strong senna tea, the castor oil being continued; and if these should fail to operate on the bowels, croton oil gtt. ss. to be given every hour, until four drops be taken.—*Evening.* His condition remains much the same. No evacuation has taken place. His stomach is retentive, but he has frequent eructations. Ordered to continue the same remedies. The croton oil increased to gtt. ss. every two hours. An opiate to be exhibited when the patient is restless.

15th. Pulse 80 ; skin natural ; tongue moist, furred, and rather more yellow ; countenance depressed ; spirits low ; abdomen very tense and tympanitic. The patient has passed a little flatus without the tube, but has had no stool. A dose of terebinthinate mixture was exhibited, but the stomach rejected it immediately. Ordered one-fourth of a grain of calomel to be taken every half hour ; fomentation of spirits of turpentine to the abdomen ; and, if restless, injections of assafoetida, each containing a drachm of laudanum ; also directed to drink chicken-water.—*Evening*. His condition continues the same, except that there is more tenderness of the abdomen. Ordered the calomel to be given in the dose of one or two grains every hour if the stomach will retain it. If not relieved, a hot brick and spirits of turpentine to be applied to the abdomen. Anodyne enemata to be given if required.

16th. Pulse 80 ; abdomen less tense and tender ; tongue furred and moist ; temperature of the skin natural. The patient has taken, in divided doses, about twenty-five grains of calomel without effect. He has had singultus during the night and morning. An anodyne enema and the stimulating fomentations have partially relieved his hiccough. Treatment continued. *Evening*. Pulse 68, full, round, and soft. Abdomen tympanitic, but less tender. The singultus continues, but the patient says he feels more comfortable than at any other time since the operation. There has been no fecal discharge. Ordered to continue the calomel, and if much pain occurs, the anodyne enema.

17th. Early in the morning, the patient complained of occasional violent pains, beginning in the wound and extending all over the body, up to the throat. The

pain about the wound was as severe as before the operation. *Half past 9 o'clock*—pulse 80, full, round and rather tense; temperature of the skin increased; pain still great; singultus continues; abdomen less tense. As the pain appeared to increase with the vascular excitement, Dr. Parrish ordered him bled to the amount of twelve ounces. Ordered also the warm bath, and occasional purgative enemata. The anodyne injections, and the calomel to be continued.---*12 o'clock*. Pulse 84; tongue and skin unaltered; he has been in the warm bath fifteen minutes; again bled to the amount of sixteen ounces.—*Evening*. Tongue still moist; pulse 88, firm, and full; singultus continues; the warm bath has been repeated; this, and the venesection have given him much relief. Treatment continued.

18th. The patient has passed a tolerably good night; free from pain, though much troubled with singultus; the warm bath was repeated at 9 o'clock last evening with great benefit; pulse 84, furred and moist; skin natural; fulness and tension of the abdomen diminished, and no pain felt on pressure. He says he is much relieved, but has had no fecal discharge; flatus is passed occasionally; ordered to omit the calomel. R. pulv. jalap, ʒi. supertart. potass ʒij. m. div. in pulv. no. 6. One of these powders to be given every hour, in sweetened mint-water.—*Evening*. The patient has been once in the warm bath, and has taken four powders; pulse 80. His condition remains, in other respects the same; ordered to continue the powders, and the anodyne injections when necessary.

19th. Pulse 72, nearly natural; skin natural; tongue furred and moist; abdomen as yesterday; constipation and singultus continue; vomiting frequent in the night;

the calomel was resumed this morning; countenance good; ordered to continue the calomel and occasional warm bath; mutton broth directed for his diet.---*Evening*. The patient feels a little better: in other respects his condition remains the same. He has partaken freely of his mutton broth, which he enjoyed much. Treatment continued.

20th. Pulse 78; tongue less furred, quite moist, and somewhat redder; gums more tumid; abdomen still tense but softer; singultus abated; countenance and spirits good. The patient discharged flatus several times, but no feces; he relishes, and desires food.---Treatment continued.---*Evening*. Pulse 72; a good deal of flatus has been passed, and the patient is disposed to renew his old habit of chewing tobacco. Treatment continued.

21st. The patient has had *several fecal discharges*. Pulse 64 and soft; gums slightly sore; abdomen greatly diminished, and its uneasiness relieved; singultus still occurs occasionally. The first alvine discharge took place last night about 10 o'clock; he then began to take sulphate of magnesia $\frac{3}{4}$ ss. every three hours; ordered to omit the calomel and continue the salts.---*Evening*. He has had four evacuations since morning; some singultus continues. Every appearance is favourable.

22d. Pulse 64, full and soft; abdomen becoming soft and natural; appetite good; the patient has had free discharges from the bowels; there is still a little singultus. The sac and neighbouring integuments are very considerably thickened by inflammation, which extends along the whole length of the incision.

From this date the patient was regularly convales-

cent, suffering little except from singultus, which was relieved by anodyne enemata containing a portion of the oil of amber, and the musk julep, administered in the proportion of five grains of musk in each dose. He was discharged in good health, on the thirtieth of the month; the cicatrization of the wound being nearly completed.*

* It will be perceived that the preceding case is unusually interesting. The patient was in extreme danger, and eight days elapsed after the operation before the bowels were opened. Its details may be regarded as prolix, but I have deemed it proper to give it in its present form as it was reported at the time by my former pupil Dr. J. Rodman Paul. He was then house Surgeon in the Pennsylvania Hospital; his humane and unremitting exertions in the case of a very humble, yet truly deserving man, while it merited and received my warm approbation, has been, I doubt not, amply rewarded by the consciousness of having discharged his duty.

CHAPTER III.

DIAGNOSIS OF MORTIFICATION.

SECTION I.

ON THE CONSTITUTIONAL EVIDENCES OF MORTIFIED BOWEL.

IT is deemed a point of great importance amongst surgeons to have some unequivocal evidence, of the existence of mortification in a strangulated bowel, before it is exposed by an operation. It is highly desirable, in forming an opinion of the probable result of a case, in which an operation is proposed, that the surgeon should present to the patient and his friends, a full and candid view of the whole subject. If there is ground for the belief that the incarcerated parts, or a portion of them, are actually dead, the prospect of a successful issue is necessarily limited; hence, it becomes very important to estimate the value of those signs which are laid down for our guidance in these cases, and to be cautious in pronouncing a positive opinion. To hold out a flattering prospect of success when it cannot be founded on a proper share of reasonable evidence, I consider radically wrong. The symptoms denoting mortification of the bowel, as commonly detailed in systematic works, are not in my judgment sufficient to establish the fact.

Thus, we are taught to believe that when the bowel becomes mortified, the pain ceases; the pulse which has been active, is feeble and creeping; clammy sweats and a death-like coldness pervade the surface; the countenance becomes hippocratic; singultus and stercoracious vomiting are generally present, and the patient dies with the intellect perfectly clear.

That these symptoms are present in a large majority of cases in which mortification of the bowel has taken place, experience amply shows; I have, however, seen cases in which extensive mortification has existed without the occurrence of these symptoms, and others in which the usual symptoms of mortification were present without the bowel being actually dead, as has appeared on the performance of the operation.

As an example of the former condition, I will state the following cases:

CASE XII.

Strangulated Scrotal Hernia—Gangrene—Death.

7th. mo. 14th, 1814. A mulatto man who appeared to be about thirty years of age, was admitted into the Philadelphia Almshouse on the evening of this day, with strangulated scrotal hernia.

15th. I visited him in the morning, and called a consultation on the case, as the usual remedies for reduction had been tried in vain. The operation was performed in the afternoon, being three days after the commencement of strangulation; the patient had not had a stool from the time of the accident. Just

before the operation, the condition of his pulse, skin, and tongue was such as would not have induced the suspicion of gangrene; his abdomen was tumid and painful to the touch. He had some hiccough and vomiting.

I operated in consultation with my medical friends, Drs. James, Hewson, Hartshorne, Chapman, and Stewart. No difficulty presented in the course of the operation, but in laying open the hernial sac, it was found that a portion of intestine only, was contained in it, and the most depending part of the bowel was mortified for the space of about half an inch in width and two inches in length. The stricture was at the abdominal ring, and embraced the bowel very closely; it was divided with the blunt-pointed bistoury, and the intestine left in the wound. We directed bladders of warm water to be kept constantly applied to the wound; barley-water for drink and nourishment, and also, ol. ricini. ʒss. every two hours.

16th. The patient passed the fore-part of the night pretty well, probably in consequence of two grains of opium which he had taken before the operation; but he had pain this morning about the umbilicus, recurring at short intervals. He took four doses of oil during the night, but rejected them in the morning by vomiting. He has had no discharge from the bowels, but has passed flatus repeatedly. His stomach is irritable, and through the day he has had singultus. It was concluded this morning to make an incision throughout the whole extent of the mortified part. I did it with a scalpel. Some liquid feces escaped, but the quantity was very small, and I began to fear that there was still some internal stricture which prevented the evacuation of the bowels. After we

left him this morning, liquid feces flowed freely, and relieved the pain at the umbilicus. This evening he has a preternatural coolness of the skin and clammy sweats, which make me uneasy about him; he has, also, singultus. My friend Dr. Hewson saw him with me. The patient says he is much relieved, and perhaps his present state arises from exhaustion. The appearance of his tongue is not bad. When the abdomen is pressed, it feels painful. Directed a very large blister to the abdomen; also porter and water for drink, and if restless, a dose of opium to be given.

17th. The blister appears to have had a very happy effect, and the condition of the patient is evidently improved. His pulse is better, his skin warmer, and the discharges from the artificial anus very copious. Ordered him to be kept on a light, liquid diet.

18th. The patient continues to improve. He has had copious discharges from the opening in the bowel, and has also had a stool per anum. Treatment continued.

19th. The patient still continues to improve, and says he is quite hungry.

The patient continued to improve pretty regularly; the mortified parts sloughed very kindly, and healthy pus formed in the divided parts. The discharges from the bowels were free at the artificial anus; the tension of the abdomen subsided entirely, and we began to flatter ourselves that the danger was over. But we were disappointed in our hopes. He had, it will be recollected, on the evening of the 16th, a coolness of the skin, &c. which soon went off. Several times after this, I found him low-spirited and languid, but he was always relieved by the tincture of assafoetida, and Hoffman's anodyne, given in small and frequent doses. He had, also, chicken

and mutton broth, which appeared to suit him very well.

On the evening of the 24th inst. the senior pupil of the house was alarmed at finding him in a very low state, and with an irritable stomach. His pulse had fallen, and his skin was cold and clammy. Various efforts were made to revive him, but without effect.

I saw him on the morning of the 25th, sinking rapidly. Every effort to rouse his system failed. A more than deathly coldness pervaded the surface of his body, which was bedewed with sweat. Respiration was extremely laborious, and appeared, toward the last, to be performed entirely by the intercostal muscles. Pressure on the abdomen gave no pain. The tongue was moist. He died about 1 o'clock, P. M.

It is worthy of remark, that on the afternoon of the 24th he was sensible of a gradual decline of strength in all the muscles of voluntary motion, and it appeared as if a complete paralysis occurred, previously to death, in the lower and upper extremities.

Dissection.

In the presence of my friend Dr. Hewson, and a number of medical pupils, I examined the body on the following day.

On laying open the *abdomen*, no adhesions were found among the intestines generally, as in peritoneal inflammation. The portion of intestine included in the stricture was a part of the *ileum*, about eight or ten inches before its termination in the *cæcum*. The strictured part adhered, very firmly, to the parts about the ring, and from the superior portion it appeared that inflammation had extended itself a considerable distance

along the tube ; but it seemed to have been of a low grade, and had passed into a state of gangrene, without adhesions being formed beyond the part immediately involved in the stricture.

To illustrate the truth of the second position, viz.: that the constitutional symptoms of mortification may exist, when the incarcerated bowel is not in a sphacelated condition, the following case is presented.

CASE XIII.

Strangulated Femoral Hernia—Deceptive Symptoms of Gangrene.

7th mo. 2d, 1818. I was called in the afternoon, to the Widows' Asylum, by Dr. Sargent, to see an old woman who had been labouring under strangulated hernia since the evening of the 29th ultimo.

Dr. Sargent was called to her yesterday, and attempted the reduction of the parts by taxis. The patient had been freely bled from the arm, was placed in a warm bath, had received several purgative injections, and ice was applied to the tumour. This morning she was again bled, and a tobacco enema was administered, which produced great nausea and sickness, but without effect upon the tumour. She was removed to the Hospital.

My friend Dr. Hewson saw her with us. We found her *entirely free from pain in the tumour or abdomen*, though it had been severe from the commencement of the attack. The pulse was very feeble, the skin cool,

and she was affected with singultus. The whole aspect of the case induced us to suspect that *the intestine was mortified*. An immediate resort to the operation was advised as the only alternative; and, after administering a full dose of laudanum, I proceeded to perform it, assisted by Drs. Hewson, Hartshorne, and Dorsey, and in the presence of Dr. Sargent and others.

The tumour lay below Poupart's ligament. It was of an oval figure, being situated across the groin. I made a crucial incision over it, and dissected up the corners, cutting the fascia with the silver director and the bistoury, until the sac was exposed. This was carefully opened, and freely divided. A small quantity of bloody serum escaped, *but it was destitute of the cadaverous odour*. The sac contained a small portion of intestine, of a very dark mahogany colour, resembling very much a mortified bowel; *but yet it was concluded to return it*.

I next divided a small stricture in the sac itself. In passing the finger inward, in the direction of the spine of the pubis, to discover the seat of the stricture at the ring, I thought I perceived, rather indistinctly, a slight arterial pulsation. My colleagues were of the same opinion. At this moment the pulse at the wrist was very low, hardly to be perceived, and the artery was no doubt influenced by the same cause.

I proceeded with great caution in dividing the stricture. By pushing my finger in the direction of the femoral arch on the pubic side, I was enabled to hitch up the lower edge of the tendon on my finger nail. The blunt-pointed bistoury was introduced along side of the finger up to the stricture, and a very small portion was divided. This enabled me to push forward the finger a

little further, keeping it in advance of the point of the bistoury, carefully feeling for the pulsation, until another slight cut was made; thus by enlarging the opening gradually, I was at last enabled to pass my finger into the cavity of the abdomen by the side of the strangulated bowel, and thus reduced the protruded parts with safety.

The patient lost but little blood during the operation, though she was exceedingly exhausted. We gave her a draught of wine and water, and put her immediately to bed. The pulse was very low, and the skin cool and clammy. The operation was completed between seven and eight o'clock in the evening.

On visiting the patient at 10 o'clock at night, I found her better than I had anticipated. The pulse was considerably elevated, and the temperature of the skin was more natural. I directed barley-water for nourishment, and laudanum, at short intervals, if restless. The bowels had not been moved, but the stomach was settled.

3d. *Morning*. The patient has passed a good night; is free from pain; her pulse continues better; her stomach retentive; tongue furred; abdomen tumid, but not tender to the touch. She has had no evacuation from the bowels.—*Evening*. In the course of the day she had a mild laxative enema, which was followed by copious fecal evacuations. The belly is less tumid and without preternatural tenderness. The tongue is furred and moist. The patient has been kept principally on barley-water since the operation. Her pulse is fuller, but not active.

4th. *Morning*. Every thing is going on well. The patient has passed an easy night; her tongue is cleaning rapidly. She is very desirous of something to eat.

I directed runnet-whey to be added to her diet.—*Evening*. Still doing well. She has some disposition to discharge from the bowels, without being able to effect it. Abdomen tumid, but soft. I directed a mild injection.

This case went on without any unpleasant symptoms ; the parts healed kindly, and the patient was discharged, cured.

The following case, which forcibly illustrates the condition of which we are treating, was kindly furnished by my friend Dr. Condie. I was called to see the patient in consultation with Dr. C., and considered, with him, that the case was entirely beyond the reach of human skill. I have rarely seen a recovery from a situation so discouraging.

CASE XIV.

Strangulated Femoral Hernia—Apparently mortal symptoms—Reduction by Stramonium.

M. Y., a female about fifty years of age, of robust frame and temperate habits, had been for some time affected with a reducible femoral hernia of the left side. On the 10th of October, 1832, while the patient was engaged in some laborious occupation, the hernia became suddenly strangulated.

I saw her on the morning of the succeeding day. The hernial tumour was about the size of a goose's egg. The patient complained of acute pain extending from the left groin to the anterior part of the abdomen, which latter was considerably swollen, and tender to the touch.

There was considerable febrile excitement, with a tense, quick, and frequent pulse, and considerable nausea. The bowels had not been evacuated since, nor for some time preceding the strangulation. As the slightest pressure on the hernial tumour caused very great suffering to the patient, it was impossible to attempt, at this period, its reduction by taxis. Eighteen ounces of blood were taken from the arm, a purgative injection was administered, and compresses wet with cold water directed to be kept constantly applied upon the tumour.

In the afternoon I found the patient greatly relieved. The pain was less intense; the tenderness and tumefaction of the abdomen were diminished; and the pulse was softer, more developed, and less frequent. So far as the obstinacy and prejudices of the patient would permit, an attempt was now made to reduce the hernia by taxis and the usual accessory means, but without the desired effect. The cold applications to the tumour were directed to be continued, and the injection to be repeated—the former one having produced no effect on the bowels.

During the night the pain returned with increased severity, and the tenderness of the abdomen was such as to render the weight of the bed-clothes intolerable. No discharge had taken place from the bowels. The pulse was contracted and extremely frequent; the surface of the body was cool and dry. The slightest touch applied to the hernial tumour was productive of great distress to the patient. Ten ounces of blood were taken from the arm; leeches to the tumour were directed, but not applied; the injection was repeated, and the cold applications continued.

The more urgent symptoms were somewhat abated

on the ensuing day. The countenance of the patient, however, evinced very great suffering. She remained constantly on her back, with her thighs drawn up towards her abdomen. Some degree of delirium was evinced in the evening. The bowels had not been opened. But little was done in the way of treatment. The patient was extremely ignorant and prejudiced, and obstinately opposed whatever was advised. The danger of her case was clearly stated to her, and the propriety of a surgical operation was repeatedly urged; but "to being cut up alive," as she expressed it, she declared she never would consent, whatever might be the result.

On the morning of the 12th I was sent for in great haste. I found the patient in a state of great prostration, with a small, feeble pulse; cold, clammy skin; contracted features; and throwing up from the stomach, at intervals, a dark green fluid. She complained of very little pain, excepting when the abdomen, or hernial tumour was pressed upon. The latter, which had been previously tense and elastic, had now a somewhat doughy feel. The vomiting of green fluid was succeeded, in the course of the morning, by discharges from the stomach of fecal matter in considerable quantities.

The patient now expressed a wish that Dr. Parrish might be called in. This wish was immediately complied with, and the doctor attended in the afternoon, accompanied by his son. The features of the case were now, in our opinion, such as to render all chance of recovery utterly hopeless; and I am convinced that any medical man would have concurred with us in this opinion had he examined the prostrate condition of the

patient—the cold, clammy skin—the feeble, and almost extinct pulse—the sunken and contracted features—and the fecal vomiting.

It was decided that from an operation under such circumstances, but little benefit could be expected:—it was agreed, however, to give the patient this doubtful chance of relief, provided that, after a candid statement to her, of our views of the case, she should request it. She, however, positively refused to submit. It was agreed, on separating, that I should inform Dr. Parrish in the morning, of the condition of the patient.

On calling the next morning to see the patient, I found her still alive, and that she had called in a black man, celebrated in the Neck, (*the low country south of the city,*) as “a curer of ruptures” *both in men and in cattle.* I remained, being somewhat curious to watch his proceedings. The hernial tumour he had covered with a poultice of bruised herbs—*the leaves*, so far as I could judge by the smell, *of stramonium*—and he was preparing an infusion of herbs to be used as an injection. This infusion was evidently of senna leaves. The injection he proposed to administer every fifteen minutes, by means of a very large and very powerful syringe. He spoke confidently of the successful result of the case.

I saw the patient again on the following morning, and, to my utter astonishment, found her in a tolerably comfortable condition! The hernia was reduced; all the alarming symptoms, under which she had laboured on the preceding day, were gone; and, though extremely weak, she was evidently in a fair way of recovery! I learned, that after continuing the injections for nearly two hours, there occurred a copious evacuation from

the bowels, of a number of hard balls; and that then, suddenly, the tumour had disappeared with a gurgling noise. These balls had been preserved for my inspection—they were formed of hard, dark-coloured feces, of different sizes, from that of a pea to that of a pistol ball, or even larger.

The patient continued daily to amend, and at the termination of *ten days* from the reduction of the hernia, was seen by me *sweeping off her door!*

Sept. 19th, 1835. I saw her this day. She enjoys excellent health, and so far as I am able to say without an actual examination, *is radically cured of her hernia!*

In forming an opinion of the probable result, in a case of mortified bowel, it becomes necessary to consider the astonishing variety in the human constitution, and its ability to resist, or its disposition to yield to the operation of mechanical causes, from which it is unable to escape. The powers of this *vis insita* in different constitutions, cannot be estimated by any known standard. It is unmeasurable and unknown until it is subjected to trial. Thus, in some constitutions, a very small portion of bowel may become strangulated, and in a few hours, its death may be effected, and all the alarming symptoms of mortification may ensue; while in others, mortification may exist for days, without producing the symptoms that usually mark its presence.

SECTION II.

ON THE PROOFS OF MORTIFICATION ON OPENING THE SAC.

A careful examination of this part of our subject becomes necessary. The treatment to be adopted in the event of mortified bowel, differs most essentially from the practice required for strangulated parts in a living state. If, unhappily for the patient, the surgeon should mistake an inflamed, for a sphacelated intestine, and in an incautious moment, should lay it open by a free incision, he inflicts a wound which may prove fatal. Even if the patient should escape with his life, it is at the imminent peril of an artificial anus, which, under some circumstances would scarcely be preferred to death itself.

Persons who have derived their information on the signs of mortification from systematic works on surgery, may consider them so clear that they cannot be mistaken. They may regard it as a work of supererogation to prove that which is self-evident; but those who have encountered the difficulties of forming an opinion on this point, at the bed-side of the patient, will excuse me for dwelling for a few moments on this topic.

The colour of the intestine is generally regarded as one of the strongest evidences of mortification. If the bowel present a dark and deep purple, approaching to black, and if circulation be wanting in the part, it may be pronounced dead. In order to ascertain whether the circulation has really ceased, it has been recom-

mended by some surgeons, that firm pressure with the finger should be made upon the suspected part, and if the colour remains unchanged, it may be considered in a sphacelated state. I freely admit that a dark purple colour, and an absence of circulation, are observed in cases of real mortification, arising from a loss of vitality in the blood-vessels, and from the consequent coagulation of the blood. But I fully believe that this condition may arise from the mechanical operation of the stricture, without the integrity of the bowel being seriously injured. As a familiar illustration of this fact, we may refer to the simple experiment of tying a string firmly round the extremity of a finger, thereby arresting the circulation beyond the string, and producing a dark blue or purple colour in the part. The same principle will apply in the case of a stricture drawn firmly around a portion of intestine, whereby the circulation may be suspended for many hours, without its absolute death being effected.

If, in connection with the dark colour of the bowel, and an apparent absence of circulation, we should find an effusion of lymph and adhesions to the surrounding parts,—the result of preceding inflammation,—the evidence of mortification would still be insufficient, because this condition very frequently accompanies cases of protracted strangulation in which the bowel is in a living state.

I consider *an ash-coloured and shrivelled or collapsed state of the intestine*, as a much more certain indication of its death, than any of the signs yet enumerated. Several cases will be found in the different sections of this work, which tend to prove this fact.

Another evidence of mortification has already been

hinted at, and as far as my experience extends, is conclusive. It is the peculiar cadaverous odour, emitted by the contents of the sac when opened. This odour is well understood by experienced surgeons. It is my invariable practice, carefully to attend to it in cases of hernia. Often have my olfactory nerves afforded decisive evidence of the melancholy fact that mortification had taken place, before my eyes have had an opportunity of giving it additional confirmation.

The following highly interesting cases will confirm the positions taken with regard to colour and the absence of circulation.

CASE XV.

Strangulated Hernia—Intestine dark, resembling Mortification.

3d mo. 3d, 1816. I was called in consultation at the Almshouse by Dr. Hewson, the attending surgeon, and met him and Dr. Dorsey at 3 o'clock. The patient was a good-looking Irishman, of middle age, who had long been subject to a scrotal hernia, which he was in the habit of reducing.

The rupture had been strangulated for forty-eight hours, during which time he had been attended out of the house by Dr. Emlen, who had bled him very freely, and the tobacco enema had been since administered under Dr. Emlen's direction, without effect. When we met, his pulse was upwards of 100 in the minute, and rather feeble; tongue moist, and nearly natural in ap-

pearance. There was but slight tenderness or tension of the abdomen. The scrotum was slightly œdematous, and a little discoloured.

As the symptoms of strangulation were urgent, it was concluded to operate at once. Sixty drops of laudanum were given, and Dr. Hewson proceeded.

No difficulty was presented in the course of the operation. The sac contained a large quantity of bloody-coloured fluid, which was *not* foetid. Eight or ten inches of small intestine were found in the sac. The principal seat of stricture was at the neck of the sac. The strictured parts were divided by the blunt-pointed bistoury. The intestine presented an unusually dark appearance, and some portions of it were almost livid. It had a very suspicious aspect, so much so, that doubts were raised as to the propriety of returning it. On pressing the part with the finger, no change was produced in its colour; which fact indicated the absence of circulation.

My opinion as to the probable vitality of the bowel was based upon the absence of cadaverous smell in the contents of the sac, and upon the want of those adhesions which invariably attend a mortified bowel.

As the case was doubtful, it was concluded to apply bladders of warm water to the surface of the exposed intestine, and return in an hour and a half, during which time we supposed that positive evidence would be afforded on the point; and we should be able to decide whether to put it back or make an incision through the intestine.

On our return we found a very happy change had taken place—the dark colour had nearly disappeared—the intestine was evidently in a state of active inflammation, and during our absence a very thin, but distinct

coating of coagulable lymph had covered its surface. Under these circumstances the bowel was returned into the abdomen. The wound was dressed with strips of sticking plaster, and pledgets of lint, and the patient placed in bed, with his hips elevated in the usual manner; after which he took an anodyne.

4th. The patient has had a good night; has passed flatus frequently; pulse somewhat tense. Bleeding, with small doses of *sulp. magnes.*, and the most rigid antiphlogistic plan, were directed.

5th. Has had two free evacuations from his bowels since yesterday, and appeared better; pulse still tense.

We recommended the liberal use of the lancet, and a blister to the abdomen, and the patient ultimately recovered, under the care of Dr. Hewson.

In this case the return of the circulation after the removal of the stricture, proves very satisfactorily that the dark colour was produced by the force with which the bowel was enveloped, impeding the circulation below the stricture.

The practice pursued in the above case—that of covering the parts with a bladder filled with warm water in order to imitate the natural temperature—was derived from my much valued preceptor, Dr. Wistar. It was strongly recommended by him in all cases requiring delay in the progress of the operation for hernia.

CASE XVI.

Femoral Hernia—Dark colour of Bowel—Stercoracious Vomiting—Recovery.

8th mo. 20th, 1835. I was called this day to see the wife of C. M., a German shoemaker in Third street, in consultation with Dr. Moses B. Smith.

The patient is a woman of delicate form, forty-two years of age; the mother of five children. She states, that nine years ago, after the birth of one of her children, she perceived a small tumour in her right groin. It was larger at some times than at others, but it has never been absent. Dr. Smith had seen her on the preceding day, and found her labouring under marked symptoms of strangulated hernia. An old midwife in the neighbourhood was in attendance before Dr. Smith. The attack commenced with a desire to go to stool, followed by a discharge from the bowels, accompanied with violent pain like an attack of colic. An operation had been suggested by Dr. Smith, but was at first declined.

When I saw her, the paroxysms of pain were agonizing; the countenance was pale and dejected; the abdomen very tumid and tympanitic; the tongue dry and brown; pulse 128, irritated rather than feeble. The operation was proposed and acceded to, and Dr. J. Rhea Barton was called in consultation. The prospect of success was greatly diminished just before the operation, as she vomited a quantity of clearly marked stercoracious matter. The patient and her husband

were candidly informed of the increased danger connected with this circumstance, but still were desirous that the operation should be tried. The parts were shaved, and she was placed on a table. An anodyne enema had been previously given. Assisted by Drs. Barton, Smith, and my son, the operation was performed about sixty-eight hours after strangulation. A crucial incision was made through the integuments in the usual way, the layers of fasciæ were divided, and the sac exposed. It was found to be extremely thin; great care was required in opening it; a small portion was included in the forceps, and the incision was made by cutting upwards from the contents of the sac. A small quantity of fluid escaped, which was entirely free from cadaverous smell; the sac was laid fully open. A portion of omentum, natural in appearance, first presented. On turning aside the omentum, a knuckle of bowel was brought into view, as dark in colour as a ripe pokeberry, (*phytolacca decandra*,) but it was destitute of cadaverous smell, and there were no adhesions from inflammation, such as are usually found about mortified parts.

The stricture was divided in a direction upward and rather inward, by the blunt bistoury; the parts were reduced, and the flaps of the wound approximated by sutures.

During the operation the pulse never varied, the patient having lost very little blood; and when it was concluded, she declared that the pain suffered in the operation was "nothing to compare" to that produced by the strangulation. She was removed from the table between 3 and 4 o'clock in the afternoon, and placed in the usual attitude in bed. A grain of opium was

given her, with directions to repeat the dose in an hour if she was restless.—Ten o'clock, P. M. The patient is much more comfortable. She has slept occasionally, and notwithstanding the opium, she has had four small bilious stools. Her chief complaint is of griping pain. Her system has reacted; her face is flushed; skin hot; and her pulse 120, and febrile. Directed her to be kept perfectly quiet; another opium pill to be given, if she be restless; and a regimen of barley-water and cold water.

21st, *Morning*. The patient has passed an easy night. She took one pill of opium after the last visit. This morning she had a return of stercoracious vomiting. She has passed flatus, but her abdomen is extremely tympanitic; the urine is readily discharged; the skin is cooler; pulse 104; tongue red, but brown and dry in the centre. Directed a table-spoonful of castor oil every two hours.—*Noon*. She has taken one dose of oil, and also an injection of assafoetida, after which she had one stool. She says she “feels more natural.” Her abdomen is rather less distended; her face flushed; skin warm, and pulse 100, and firm.—*Evening*. The patient has retained three doses of oil, and rejected the fourth, but without any stercoracious matter. No stool; skin hot and feverish; pulse 100, and in other respects much the same. Abdomen tympanitic; the distended arch of the colon, and the convolutions of intestine being distinctly felt through the parietes. Directed occasional injections.

22d, *Morning*. Has greatly improved in every respect; passed a good night, and has had two large bilious stools. Pulse 85; tongue moist; abdomen less tumid.—*Evening*. She has had seven small bilious

stools. Still improving; pulse 80; abdomen nearly natural. The patient relishes her gruel, and wishes it made thicker.

23d, *Morning*. The patient was restless and disturbed by dreams last night. She feels very uncomfortable, and desires a change of posture and clothing. She has had no stool, but passes flatus freely. Pulse 80; tongue moist; her abdomen has resumed its natural appearance. Ordered a change of dress and linen.—*Evening*. She has had a free discharge of indurated feces after an enema. She takes her gruel with relish.

24th, *Morning*. Was somewhat feverish in the early part of last night; pulse 80; no stool. I removed the stitches from the wound. The tumour is somewhat inflamed.—*Evening*. There has been one discharge from the bowels, with scybalæ.

25th. Has passed a good night. Pulse 80. The wound is inflamed and slightly painful. Directed a poultice to the tumour.

26th. Pulse 72. Has had one solid feculent discharge after an enema. Tumour still inflamed. Ordered rye mush and molasses for diet.

27th, *Morning*. The patient had a restless night, some fever, and unpleasant dreams. Her bowels have not been opened since yesterday, although an enema has been given. The inflammation is extending around the wound; there is burning and soreness in the part; the appetite is diminished, and the countenance is more dejected; pulse 78. Directed mannæ opt. ʒi., sup. tart. potassæ ʒss., aquæ bullientæ 0.ss., a wine-glassful to be taken every two hours.—*Evening*. The medicine has operated twice. Pulse 80; tongue moist. Feels much better.

28th. Found her in fine spirits, sitting up in bed. She has a good appetite. The tumour is suppurating at a small point at the inner and lower part of the wound. The pus looks well, and is free from any unpleasant smell. Directed a diet of mutton or chicken broth, rye mush and molasses, to be continued.

This patient recovered completely.

From the views now presented, I would wish strongly to impress the young practitioner with the importance of being on his guard in all cases of doubt. Let not *colour of the bowel, or the apparent absence of circulation* be relied on as an evidence of mortification, unless connected with *the collapsed state of the intestine, and the cadaverous odour*.

CHAPTER IV.

ON 'THE MANAGEMENT OF MORTIFIED BOWEL.

THERE are two conditions of mortified bowel which require separate consideration. In the first, the whole calibre of intestine is in a state of complete sphacelation; while, in the second, only mortified spots are detected on the strangulated part.

My experience in mortified bowel may not be as extensive as that of many practitioners. It has gone to confirm the rule now generally adopted by surgeons, that when the whole calibre of the intestine is actually dead, the inflammation preceding this result has been sufficient to fix the protuded parts to the ring and its immediate vicinity by adhesion; and there is no reason to fear their being drawn into the cavity of the abdomen by the peristaltic action of the intestines: hence no necessity exists for inflicting fresh violence on contiguous parts by any mode of practice designed to prevent such an accident.

In cases of this description, after allowing sufficient time to decide the question of the actual death of the intestine, it is proper to open it by incision, and thus allow a free discharge of fecal matter, and then to apply simple dressings, and leave the case to nature.

Several cases of complete cure, without the occurrence of fistulous openings, are related by Petit, in

which this practice was adopted. It is remarked by Lawrence, that almost all the numerous instances of recovery from mortified hernia which are recorded in the annals of surgery, took place where the surgeon was contented to remain a quiet spectator of the process, without interfering by any artificial attempts at uniting the divided intestine. (*Lawrence, Amer. Edit.* p. 235.)

For the method of proceeding in these cases, I refer especially to the case of the mulatto man at the Alms-house, related on page 81.

The proper method of disposing of a strangulated intestine, when mortified spots are found upon it, has given rise to some discussion among surgeons. A practice formerly obtained, of stitching a portion of the mesentery to the sides of the wound, to prevent the return of the diseased bowel into the abdominal cavity. This was founded on the fear of the dead bowel being drawn far away from the external wound by the peristaltic action of the intestines, and thus acting as a foreign substance in the cavity of the peritoneum. An additional source of danger might arise from the sloughing of the dead portion and the effusion of the fecal contents of the bowels into the abdomen. But it has since been shown, by Dessault and others, that the inflammation which always precedes the occurrence of mortified spots, is sufficient to restrain the bowel in the immediate vicinity of the ring, and thus to insure the passage of fecal contents through the wound.

It is therefore now generally recommended that, after opening the sac and dividing the stricture, the parts should be gently returned into the abdominal cavity,

leaving the result of the case to the operations of nature.

My own experience as to favourable results under any mode of treatment, is very discouraging. Hitherto it has been my practice to return the parts as recommended ; but the fatal termination of the case has so generally followed, that I cannot speak with confidence of any method. Cases are related, however, by Lédran, Petit, Dessault, Cooper, and others, which terminated favourably under this method. In some instances, without the formation of an artificial anus, and in others, with this disgusting accompaniment.

Another plan has been proposed for the treatment of mortified spots, which it may be proper to notice. I allude to the application of ligatures with a view to hasten the separation of the mortified parts, and to produce a healthy union between the surfaces included in the ligature. A case attended by Astley Cooper, is related by Lawrence,* in which this practice was adopted ; the parts were returned into the abdominal cavity, and the patient recovered. This is high authority, and should the success of the practice be confirmed by ample experience, I should feel bound to adopt it, although its propriety is at variance with my present opinions.

When a small portion of strangulated intestine becomes dead, what must be the condition of parts in its immediate vicinity, which have not yet completely yielded up their vitality ? They must certainly be in an inflamed condition, nearly approaching to gangrene. Under such circumstances, would the application of a ligature be most likely to result in a healthy adhesive

* Note to Lawrence on Ruptures, p. 226, Amer. Edit.

inflammation of the surrounding parts, or would it not more certainly and speedily induce mortification?

It seems to me, moreover, that *the renewal of stricture at such a time*, by a ligature, even on a small portion of bowel, would not be in accordance with sound principles in surgery, when the whole object of the operation is *to remove strangulation as speedily as possible*. Besides, it is well known that the strangulation of one side, or slip of an intestine is sufficient to produce all the symptoms of complete obstruction, and has sometimes resulted in death. Several cases of this kind are related by Hey, in his work on surgery, and one has fallen under my notice at the Almshouse. Hence, would there not be a risk of the symptoms of strangulation continuing, even after the division of the stricture, and the return of the bowel?

CASE XVII.

Ventre Inguinal Hernia—Mortified Spots—Testicle involved in the Tumour—Death.

5th mo. 31st, 1815. I was called in haste, and after night, to Germantown, with my friend Dr. Hartshorne, to see J. D., a man supposed to be about forty years of age. He had been labouring under strangulated hernia from the preceding day, and the usual means of reduction had been used without effect by Dr. Bonsall. Among other measures employed he had been bled; but as there was some tension of his pulse still remaining, we concluded to bleed him again, while sitting erect

in bed, until he should become fainty, and then to repeat the attempt to reduce the parts by taxis. After abstracting ten or twelve ounces of blood, which did not occasion the patient to faint entirely, the taxis was tried in vain. We then directed an enema, gave some laudanum by the mouth, and after waiting about an hour, proceeded to the operation.

The patient had never had a descent of the testes into the scrotum, and there was hardly any appearance of this receptacle. The hernial tumour was large, and of nearly an oval form; it appeared remarkably tense, and was painful to the touch; but there was no tumefaction or tenderness of the abdomen.

I made an incision through the skin and laid bare the tendon of the external oblique muscle. On opening the sac, the contained fluid rushed out with great force: it had an unpleasant cadaverous smell. The first thing that presented, was a portion of omentum, of a dark colour, and the spermatic cord lying in front of the sac; for it appeared as if the omentum was contained *in one sac*, and the intestine and the testicle in another, which occupied the superior part of the tumour. The intestine was of a dark colour, interspersed with still darker spots, but there was no adhesion to the adjacent parts.

The aperture from the abdomen did not appear to me to preserve that obliquity which is peculiar to the true abdominal canal. It seemed to be nearer to the linea alba than is common. The stricture was firm, and must have been very severe in its operation. After carefully dividing the stricturing part with the blunt-pointed bistoury, the intestine and omentum were readily reduced. The parts were dressed lightly, and the patient put

to bed. The testicle was permitted to remain in the wound, for we could not get it into the scrotum, and it was not thought advisable to return it into the abdomen. After the reduction of the protruded parts, on examining with my finger round the ring, I thought I could distinctly perceive the pulsation of an artery on the outer part, toward the ileum; but as I made the incision directly upward, and with caution, it was avoided.

The patient sustained the operation with remarkable fortitude; but soon after he was put to bed, he was bedewed with a cold clammy sweat; his pulse was 120 in the minute; but still his respiration was good, although he had occasional singultus. At first, I indulged the hope that his symptoms resulted from transient exhaustion, and that his system would react; but in this I was mistaken. Dr. Hartshorne and myself left him at about 2 o'clock, A. M., and at seven the same morning, he died.

Remarks.

In this case I regret the bleeding to which we subjected the patient just before the operation. Sufficient time had been spent in efforts at reduction, and as the intestine was but partially mortified, it is possible that an immediate resort to the operation might have been successful.

It has been stated, that as a general rule, a strangulated bowel in a state of mortification, will be found so fixed by adhesive inflammation, to the immediate vicinity of the stricture, that there exists no necessity for applying a ligature to the mesentery to prevent its retrocession. Cases, however, may occur, that

may be regarded as exceptions to the general rule ; or rather, that at the time of the operation, may lay out of the rule, and may subsequently be attended with difficulty and danger. I believe that the injury inflicted on an intestine by the severe strangulation or pinching of so delicate a part, may prove sufficient ultimately to deprive it of vitality, even after the original cause is removed. All this may occur. The intestine, at the time of the operation, may not present any of the appreciable evidences of gangrene which would call for specific treatment. It may be returned within the cavity of the abdomen:—it may recede to some distance from the ring—and, days afterwards, the fairest prospects of a recovery may be blasted by the separation of a small slough from the side of the bowel. The contents of the intestine may pass into the cavity of the peritoneum, and may actually be diffused extensively between the folds of the intestines.

The following case affords a striking illustration of this fact.

CASE XVIII.

1st mo. 24th, 1831. I operated to-day, at about one o'clock, P. M., for strangulated femoral hernia, on M. C., the wife of a respectable merchant, and the mother of twelve children, several of whom are yet young. She had been subject to a femoral hernia in her right groin for about a year, and by my advice, had worn a truss. The strangulation occurred in the act of vomiting, when the truss was off.

I was called to visit her with my friend Dr. Janney, within twenty-four hours after the strangulation. There were some interesting particulars in the case. I was informed, that in the commencement of the attack the pain in the abdomen was very violent, and the vomiting severe; but that these symptoms had subsided without any treatment to explain it. She had a large feculent discharge, which appeared to contain recent bile, and which occurred without any artificial means, some hours after the operation of an injection of decoction of senna.

Although I was accustomed to see discharges *directly after strangulation*, yet in this case, I confess I was induced to believe that the stricture was removed; particularly as the violent symptoms which marked the attack in its commencement had greatly moderated.

On the following day, I discovered that the symptoms had increased, though they were not urgent. The patient had no pain on pressing on the abdomen, or on the tumour in the groin; though the symptoms were sufficiently marked to induce the suspicion of strangulation.

On the day preceding the operation, she had repeated efforts at stool, with occasional slight discharges of feculent matter, and copious discharges of flatus. The symptoms, however, though not violent, continued unabated. She had no pain, but an increasing languor, and indescribable distress, nausea, and occasional vomiting; distressed countenance; eructations and tympanitic abdomen; all of which proved the existence of strangulation.

Dr. J. Rhea Barton was associated with us in consultation; the usual remedies for reduction were faith-

fully tried; and the operation was proposed on several occasions; but the patient strongly objected, and did not consent until the 24th—being the fourth day from the commencement of the strangulation.

I performed the operation, assisted by Drs. Barton and Janney, and my son. No unusual appearances were presented. The sac contained a small quantity of fluid, and a knuckle of bowel in an inflamed condition, but not gangrenous. No cadaverous odour could be detected. The stricture was divided and the parts returned.

24th. *Evening*. The patient had two evacuations; after which, an injection of lac. assafoetida was administered, and produced copious discharges of flatus, and the bowels were freely opened, to her great relief. Her stomach is retentive; the eructations have nearly ceased; and the tympanitis is much diminished. Her pulse is intermittent, and beats 80 times in the minute. A hop pillow was used during the night.

25th. *Morning*. The patient slept four hours during the night. An enema of assafoetida was administered about midnight. She had two small discharges from the bowels, and passed flatus. Pulse about 100. The patient is perfectly free from pain; her abdomen soft; her stomach retentive; and she is entirely relieved from nausea and eructations. Her mouth and tongue are dry; but the thirst, which was excessive during the strangulation, is now much diminished. Directed a liquid farinaceous diet, and a repetition of the injection of assafoetida, if the bowels should be uneasy.—*Evening*, 6 o'clock. She has passed a comfortable day. The mouth and tongue are less dry; thirst diminished. The abdomen is not painful on pressure, though still slightly tympanitic. Pulse 100. Directed an injection of assa-

foetida.—10 o'clock. After taking a wine-glassful of thin gruel, sweetened with sugar, she complained of most violent pain in the belly, and in a moment she became extremely ill and very much agitated. Dr. Janney and myself were speedily called. We found her pulse tense and full, beating 80 strokes per minute. She was freely bled, about twenty ounces being taken, which her pulse bore well; and we directed an injection of assafoetida with sweet oil and water. Dr. Janney remained with her.

26th. *Morning*, $\frac{1}{2}$ past 9. The patient has passed a wretched night. There has been no passage from the bowels, although she has taken four table-spoonfuls of castor oil. She has had a return of the eructations, but no vomiting. The abdomen is very tender to the touch, and somewhat tympanitic. The countenance dejected. Pulse 120, and rather weak. The blood drawn last night has no size upon it. Dr. Janney remained with the patient until 2 o'clock, P. M. He applied a spice-plaster over the stomach, and gave her an anodyne enema; but all in vain. The patient died.

Dissection.—Dr. Janney and my son examined the body, and afterwards informed me that there was found a perforation of an oval form, on one side of the small intestine, evidently formed by the rupture of a slough. Through this opening the contents of the bowels, to the amount of at least a pint of fluid fœces had been evacuated, and diffused amongst the convolutions of the intestines. The parts around the slough were but little altered from their natural appearance, and the size and shape of the mortified portion induced the belief that this portion had been grasped by the stricture. The intestines occupied their natural posi-

tion; there were no adhesions of the mortified portion to the peritoneum, and the bowel had receded about two inches from the ring. General peritoneal inflammation had been caused by the effusion of feces, and slight adhesions between the convolutions of the intestines had taken place.

CHAPTER V.

ARTIFICIAL ANUS.

WHEN a strangulated bowel becomes mortified, if death does not ensue, the skin over the tumour sloughs, and the feces are discharged through the opening, forming an artificial anus.

This is certainly one of the most loathsome conditions to which a human being can be subjected. It is really deplorable for a person of decent habits to possess no power over the alvine discharges.

The artificial anus may be divided into two species. The mildest and most manageable form is generally slow and insidious in its approach. From the course of the symptoms we are led to the conclusion, that a small portion of the calibre of the intestine becomes partially strangulated. The parts around inflame, and are agglutinated to each other—suppuration takes place, and an opening is formed by the ulcerative process, between the bowel, the sac, and the integuments—and an abscess appears externally.

All this may be accomplished with very little constitutional disturbance, and the first evidence of a connection between the abscess and the intestine, will be exhibited by a discharge of feces and flatus at the groin.

Patients of this description may recover completely under the curative efforts of nature. I have seen several instances of this disease, which I will briefly narrate.

CASE XIX.

5th mo. 3d, 1828. I was accustomed to attend a respectable old lady of this city, of delicate constitution, and subject to chronic cough. While I was in attendance, on a late occasion, she called my attention to a small tumour in the groin, which excited no particular anxiety in my mind; and I contented myself with directing emollient applications, supposing it might be a simple abscess. It advanced very gradually to suppuration: when this occurred, it was discovered that flatus, and thin feculent matter were discharged through the opening. At the same time the natural discharges through the rectum were not materially interrupted.

The patient was very far advanced in years, and died in about three months, from a gradual failure of the powers of nature. The discharge did not appear to have any agency in the event—during the last month of her life it had nearly ceased—and appeared to be gradually diminishing.

During the whole time the functions of the stomach and bowels were not strikingly impaired.

CASE XX.

10th mo. 25th, 1824. I accompanied the late Dr. Perkin to see S. S., a young female upon whom he was attending. She had been subject to a small tumour in her right groin from childhood. About four weeks previous to my visit, while in the act of vomiting, she had an increase of the tumour, and an attack of colic. By the aid of injections, and a dose of castor oil, she was relieved, and the next day was pursuing her usual avocations. Four days after this she partook of cold-slaugh, (i.e. chipped cabbage,) and was again attacked with the symptoms of colic, from which she was relieved by the same means.

At this time she called Dr. Perkin's attention to the tumour in her groin—it was about the size of a bubo, and inflamed. A poultice was directed, and in a few days suppuration took place, and feculent matter was discharged through the abscess. Four days after this, she had a discharge from the rectum, and was greatly relieved.

She was kept upon a soft diet, and finally recovered. This case is compiled from rough notes taken at the time, and is not as detailed as I should wish. Dr. Perkin is deceased, and I am not in possession of a more complete history.

CASE XXI.

Umbilical Hernia—Sloughing Externally—Natural Cure.

In the autumn of 1827, I was called in consultation with Drs. Ellis and Lukens, to visit the wife of J. L., a worthy old citizen residing in Front street. The patient was a large, corpulent woman about seventy-seven years of age. She had lately received a strain by falling out of bed; and a few hours afterward, a small tumour, about the size of a walnut, was discovered at the umbilicus.

She had been for many years subject to colic, and was seized, a few days previous to my visit, with an unusually severe attack, which had not yielded to the usual remedies. Dr. Lukens, the family physician, was called, and found the bowels obstinately constipated, with considerable pain in the abdomen. He prescribed the ordinary remedies without the desired effect. Dr. L. being absent from the city, Dr. Ellis saw her. The symptoms continued for several days, when the attention of her daughter was drawn to the tumour at the umbilicus—it was discharging a greenish offensive matter. Dr. Lukens was sent for, and at once discovered the true character of the case, and I was requested to see her in consultation. At this time she was discharging large quantities of feculent matter from the opening, and the evacuations from the anus were suspended for several days. She suffered much from excoriations over the abdomen caused by the contact of feces. We attempted to close the opening by compresses and

bandaging, but this evidently increased the distress of the patient. The sore was therefore left open, and large quantities of mucilage of gum Arabic were applied over the abdomen, to shield it from the irritating effects of the discharges. The discharge continued for several weeks, and finally ceased entirely; the sore healed, and the patient completely recovered. While the discharge was declining, the patient took a dose of sulph. magnes. to open the bowels; during the operation of the medicine the sore was re-opened, and the discharge was renewed as copiously as at first. After this, the bowels were moved by enemata, and the patient was confined to a farinaceous diet during the whole course of the attack.

Remark.

It will be observed, in the above case, that a purgative caused serious mischief in the progress of the cure.

The great principle of treatment in these cases seems to be, to avoid all kinds of cathartics, and to confine the patient to a mild, soft diet. Among other articles, rye mush and molasses are well adapted to such cases.

The danger attending an artificial anus, depends upon the part of the intestine which has been involved in the stricture and becomes mortified.

If a portion of the jejunum be opened, the chyle which was intended for the nourishment of the system may pass out externally: a patient in this condition becomes enfeebled and emaciated, and dies. A case of this description fell under my observation at the Pennsylvania Hospital. It is next narrated, as reported in my hospital-book by my friend and former pupil Dr. Caspar Morris, who was then house-surgeon.

CASE XXII.

Artificial Anus—Exhaustion—Death.

Isaac Lewis was admitted a patient into the Pennsylvania Hospital at some time during the sixth month, 1824. He had been afflicted with congenital scrotal hernia, on the right side, until some time in the preceding summer, when he was attacked by what was supposed to be colic, by his physician in the country, and he was treated accordingly. Sloughing of the integuments about the scrotum took place, and one of the testicles became involved in the disease. Such was the only account we could obtain from the patient.

On his admission, a sinous opening was discovered near the external ring. From this orifice there was a discharge, the nature of which led to some discussion among the surgeons of the institution, some of whom judged it to be chyle, and others thought it was merely purulent matter. Considerable quantities of flatus also escaped, particularly when the patient rose, or when pressure was made on the abdomen. The man was in an extremely weak and emaciated condition, and had an obstinate diarrhœa, together with hectic fever. His appetite was enormous, and by the use of tonics and very nourishing diet, his health improved, though he continued too feeble to sit up or walk.

About the 15th of the Tenth month, Dr. Barton, assisted by Drs. Hewson and Parrish, made an incision through the integuments, and traced up the sinus to the internal ring. He was able to pass a probe for some distance

further, but whether into the abdomen or into a sinus between the muscles and the peritoneum, could not be determined. After the operation he was put to bed, and very soon discharged both from the wound and the rectum, a matter very closely resembling the shreddy evacuations often noticed in chronic dysentery. The connection between the sinus and the intestinal canal was thus demonstrated beyond the possibility of doubt. From this time until the death of the patient, which occurred about ten days after, he continued to have fecal discharges from the wound.

Dissection. On examination, the following appearances were presented in the abdomen. The whole of the small intestines were found agglutinated by adhesions to each other, to the omentum, and to the abdominal parietes. On the right side the adhesion connected a portion of the jejunum to the peritoneum just within the opening of the sinus, and a probe might be passed for a considerable distance into the belly, along a sinus formed between two barrels of intestine, following the course of the colon. Towards the left side, nearly opposite the opening on the right, was found the cause of the mischief: about three inches of the intestine was united by adhesion to the peritoneum lining the transverse muscle, and at this point there was a communication between the cavity of the bowel and the sinus already described.

The attempt was made to explain these appearances in the following manner. It is probable, that after the strangulation and during the consequent sloughing of the bowel, it receded from the mouth of the sac, and took its position on the left side of the abdomen, adher-

ing to the surrounding parts in such a manner as nearly to restore the regular route of the alimentary canal; but that, in the mean time, feces had escaped into the cavity of the peritoneum, producing universal peritonitis. It is evident that the feces thus effused, had been shut in by adhesions, and that, in travelling toward the right abdominal ring, which offered the only outlet, they had established the fistulous sinus which caused the death of the patient.

When the whole calibre of the intestine included in the stricture becomes mortified, a deformity of the most disgusting character is the result. The bowel being doubled upon itself, two openings are formed, through the upper of which, feces and flatus escape. The sides of the intestine are agglutinated to each other by adhesive inflammation for some distance, presenting an appearance which has been aptly compared to a double barrelled gun.

A case of this kind fell under the care of Drs. Wistar and Physick at the Pennsylvania Hospital, in 1809, in which Dr. Physick conceived and executed a most admirable plan for the relief of the patient. A full account of this interesting case was drawn up by Dr. B. H. Coates, and published in the *N. Amer. Med. and Surg. Journ.* vol. ii. p. 269. That part of the history which relates to the operation I have extracted.

“The next method proposed by Dr. Physick, was to cut a lateral opening through the sides of the intestines where they were adherent. But not knowing the extent of the adhesion inwards, he thought it necessary to adopt some preliminary measure for insuring its existence to such a depth as might admit of the contemplated lateral opening without penetrating the cavity of

the peritoneum. By introducing his finger into the intestine through one orifice, and his thumb through the other, he was enabled to satisfy himself that nothing intervened between them but the sides of the bowel. He was thus enabled without risk to pass a needle, armed with a ligature, from one portion of the intestine into the other, through the sides which were in contact, about an inch within the orifices, which ligature was then secured with a slip knot.

"This operation was performed on the 28th of January, 1809. The ligature was merely drawn sufficiently tight to insure the contact of those parts of the peritoneal tunic which were within the noose. When drawn tighter, it produced so much pain in the upper part of the abdomen, of a kind resembling colic, that it became necessary immediately to loosen it. The ligature, in this situation, gradually made its way by ulceration through the parts which it embraced, and thus loosened itself. It was, at several periods, again drawn to its original tightness.

"After about three weeks had elapsed, concluding that the required union between the two folds of peritoneum was insured, Dr. Physick divided with a bistoury all the parts which now remained included within the noose of the ligature. No unfavourable symptom occurred in consequence.

"On the 28th of February, the patient complained of an uneasy sensation in the lower part of the abdomen; and, on the 1st of March, he extracted with his own fingers some portions of hardened feces from his rectum. On the 2d of March, two or three evacuations were produced in this manner. On the 3d, an enema, consisting of a solution of common salt was directed to

be given twice every day. The first of these occasioned a natural stool, about two hours after its administration. The same effect was produced on the 4th, 5th, and 6th; and the discharges from the orifice in the groin now became inconsiderable. Adhesive plasters, aided by compresses, were employed, not only to prevent the discharge of feces from the artificial opening, but with the additional object of procuring the adhesion of its sides. This last effort was unsuccessful.

“On the 24th of June, an attempt was made to unite them by the twisted suture. Pins were left in for three days, and adhesion was, in fact, effected; but owing to the induration of the adjacent parts, the wound again opened.”

The hope of an entire closure of the orifice was finally abandoned. But the discharge of feces was effectually prevented by the application of a truss, with a compress and large pad.

On the 10th of November the patient was discharged from the hospital in good health and spirits, and applied himself, with very good success, to acquire the profession of an engraver.

Had health been restored in the patient, whose case is detailed at page 81, (*case xii.*) I should have attempted to cure the artificial anus by Dr. Physick's method.

CHAPTER VI.

ENTERO-EPIPLOCELE.

It not unfrequently happens that omentum and bowel are both contained in a hernial sac; and when strangulation occurs under these circumstances, the case is rendered more complex and difficult.

The omentum, in some instances, assumes such a form as to contain within it a cavity, into which the bowel descends and becomes strangulated. If this peculiar relation of the parts is not well understood by the surgeon, he may be greatly embarrassed in the operation, at a moment when he should proceed with calmness and confidence.

In the preceding cases we have considered only one hernial sac, as the investment of strangulated parts—we have noticed the difficulties of opening the sac, from an absence of fluid and other causes, but still when the opening is effected, the whole contents have been fairly exposed. But what must be the feelings of a young surgeon, perhaps in his first operation, when he has succeeded in detaching a hernial sac from its adhesions, and brings into view a mass of omentum, firmly impacted together by strong adhesive bands? What is now to be done? the sac is opened, but no strangulated bowel can be discovered, although the symptoms unequivocally proclaim its existence. To suspend all fur-

ther proceedings, dress the wound, and place the patient in bed, is to consign him to death, after having subjected him to the most painful part of the operation. The object must be steadily pursued, the operator must recollect that a cavity is to be found in the centre of the omental mass, which contains the strangulated bowel: he must divide the omentum, cutting as it were through the crown of an arch, and he will then discover that there is a sac within a sac, and the intestine will be brought into view.

The proper disposition of the omentum in an entero-epiplocele demands the careful consideration of the surgeon. This part may be found very much altered from its original structure, from the fact of its having been long excluded from the abdomen; it may be in a state of mortification, from the effects of severe strangulation; or it may have recently descended, and be in a state of acute inflammation.

The first of these conditions I shall designate by the term

EXPATRIATED OMENTUM.

Some readers may smile at this term; but perhaps they may be convinced that it conveys a brief but just illustration of the condition of the parts.

It is possible for a man to absent himself for so long a period from his native country, that his early associations may be completely dissevered. He may acquire new views, he may cultivate other affections, and may become estranged from the land which gave him birth. In the course of events, such an alien from his country may return as an enemy, clothed in hostile array.

So it is with the omentum; a portion of this structure may be separated for so many years, from the cavity of the abdomen, that it may entirely lose its native character. Instead of a soft, yielding apron of fat, destined to spread over the delicate bowels, it may become converted into a solid mass, bearing no resemblance to its original structure, and totally unfitted for the performance of its appropriate functions. It is expatriated, and has become an alien from its native home.

If in this condition it be forcibly returned within the cavity from which it originally escaped, it may act as an extraneous body, and may prove an agent of discord, danger, and death.

The treatment of omentum in this condition demands serious consideration, and not unfrequently surgeons of acknowledged eminence have been led into difficulties.

The following case, extracted from Hey's Surgery, affords a striking evidence of the danger of returning a diseased mass:

"February 1st, 1789. I was called in the afternoon to visit Robert Walker, a poor man, aged thirty-seven, who was in great pain from a strangulated hernia. He had been subject to the hernia for many years. It had several times been strangulated for a few hours, according to his account, and could never be entirely replaced within the abdomen. The strangulation at this time had commenced the preceding evening at 8 o'clock, soon after which he had a stool, but afterwards had no evacuation. He vomited sometimes, and had a little hiccough. His belly was somewhat tense, but not much inflated. His tongue rather white. His pulse soft and calm at sixty-four. The lower part of the tumour in the scrotum was soft; the upper part was hard. The

scrotum was so thin, that I could feel the omentum within the hernial sac.

“I ordered a clyster, made with two drachms of tobacco boiled in a pint of water for ten minutes, to be injected; and cloths dipped in cold water to be assiduously applied. I did not bleed him, as his pulse was so soft and calm. The clyster had a powerful effect, producing great sickness and vomiting, with a cold sweat, during which the pulse sunk to fifty-six. I attempted during this languor to reduce the hernia, but in vain; not the least motion was produced by my attempts.

“I most strongly recommended the operation, and advised the poor man to go into the infirmary, as the accommodations of his house were very bad. My advice did not prevail, so I gave him in the evening fifty drops of tinct. opii., which entirely removed his pain and vomiting. The next day the poor man consented to go into the infirmary, but not till towards evening. The pain had now returned, the abdomen was more inflated and tense, and the tumour was larger. The operation was immediately performed.

“Not the least quantity of fluid issued out when the hernial sac was opened. A large portion of omentum, and a smaller of intestine, were the contents. The former appeared to have laid a considerable time in the hernial sac; for it not only adhered to the sac in many places, but also had formed in it several small pouches, in which it lay depressed beyond the level of the sac. The intestine was dark-coloured, but had contracted no adhesion. The stricture was not formed by the abdominal ring, but entirely by the neck of the hernial sac, into which I could not introduce the least portion of my finger.

“I was obliged to divide the ring pretty high, that I might with safety divide the neck of the sac; and this last division was effected by cutting along the groove of a director, till I had made a sufficient aperture for the introduction of my finger. As the omentum adhered to the sac by little cords, which might easily be divided, I separated it from the sac, and reduced it immediately after the intestine. This was easily reduced, but the reduction of the omentum gave some trouble. The omentum did not feel brittle, nor appear to be in a gangrenous state. When the contents of the hernia were reduced, some serous fluid issued out of the abdomen. A purging clyster was ordered to be injected; and he was directed to take half an ounce of castor oil every two hours, till a free evacuation should be produced.

“February 3d. I found him in a good state at noon; the clysters had produced a stool, and after the second dose of castor oil he had three evacuations. His pulse was at eighty-six.

“Notwithstanding these favourable appearances, the symptoms of inflammation, such as vomiting, soreness of the abdomen, with considerable pain, returned in the evening. Eight ounces of blood were taken from his arm; a clyster was injected; the *ol. ricini* was repeated; and a large blister was applied to the abdomen. These means afforded no relief, and the poor man died at seven in the morning.

“In the evening I examined the contents of the abdomen. The intestines appeared in many places inflamed, and adhered to each other universally. That part which had been strangulated was of a darker colour. The omentum did not cover the anterior surface of the intestines as usual, but passed down on the left side of

the abdomen, collected together like a thick rope. The strangulated portion had now become very brittle, and was dark coloured at its inferior part. Bloody serum was contained within the abdomen."

Here is an instance of death resulting from the practice of returning a portion of expatriated omentum into the abdominal cavity. A case somewhat similar, though not resulting in death, occurred several years ago in the Pennsylvania Hospital, under the care of Dr. J. Rhea Barton.

A patient was admitted with strangulated entero-epiplocele, and was operated upon by Dr. Barton. A large mass of hardened omentum was found in the sac, which was returned with the bowel into the abdomen. A train of the most alarming symptoms speedily ensued, causing great solicitude for the life of the patient. Finally, abscess formed in the groin, at the wound, through which several large masses of dead omentum were discharged. Dr. Barton thought that the quantity of solid matter discharged, was almost equal to three-fourths of the whole omentum in its natural state. The discharge was kept up for several weeks, during which time the strength of the patient was supported by a generous diet, and he was ultimately discharged cured.

A practice was recommended by some of the old writers, which is still more dangerous than the preceding. It consisted in tying a ligature firmly around the root of the hardened mass, removing the portion below the ligature, and returning the part with the ligature attached, and its end retained on the outside. A number of cases are on record, where this practice has actually proved fatal, even in the hands of eminent surgeons.

In the surgical works of Percival Pott, a case is very candidly stated, in which this practice caused the death of an individual.

The patient had long been affected with a bubonocoele, which was inconvenient from its bulk alone—he applied to Pott to remove it, which he accordingly did. A ligature was applied around the root of the diseased mass, and the omentum below removed. The patient at the time of the operation was in perfect health; but a train of the most violent symptoms ensued, which resulted in his death.

So many proofs of the dangerous effects of this plan of treatment have been adduced, that I believe it is now generally abandoned.

To counteract the dangers arising from this plan, it was recommended by Pott to excise the diseased omentum, and return the sound parts into the abdomen without the application of a ligature at its root. He believed that the risks of hemorrhage by such a course, were much less than surgeons generally supposed.

I have never seen this practice adopted, and therefore cannot speak of it from experience; but I should consider that the division of the large blood-vessels, near the root of the omentum, must necessarily give rise to bleeding, which would prove dangerous to the patient. At the same time it must be admitted, on the authority of Pott, that the practice has in some cases been safely pursued. Two cases are reported by Hey, of Leeds, in which he pursued this practice, on the recommendation of Pott, and dangerous hemorrhage ensued. An abstract of one of these I shall detail in this place, in the absence of any experience of my own. It is taken from Hey's Surgery, p. 188, second edition.

“*Case.*—The hernial sac contained a good deal of serous fluid, besides a pretty large portion of intestine enveloped and completely covered by omentum. The neck of the hernial sac, below the abdominal ring, formed so considerable a stricture, that I could not introduce the tip of my finger to guide the curved bistoury. It even required some force to introduce a director suitable to this occasion. After dividing the neck of the hernial sac, I could easily introduce my finger within the abdominal ring, which I also divided sufficiently to permit the reduction of the intestine.

“The omentum was become gangrenous; and in one part adhered pretty strongly to the intestine. That part of the intestine which had been enclosed in the stricture made by the neck of the hernial sac, appeared as if it had been tied round by a string. The colour was so much altered by this impression, that we were under considerable apprehension of a separation taking place at this part. I endeavoured to reduce the intestine with all possible gentleness, after I had separated it from the omentum; yet, notwithstanding all the caution I could use, I was much afraid that the operation would not preserve the life of my patient, even if no injury should arise from the morbid state of the omentum.

“I had always been afraid of large wounds of the omentum; but as the excision of a gangrened portion, by cutting through the adjacent sound part, stood so strongly recommended by Mr. Pott, of whose judgment I had a very high opinion, I determined to follow his example in this instance. I cut off, therefore, all that had a morbid appearance; and the remainder, as soon as I

had ceased to hold it, retired spontaneously into the abdomen.

“A hemorrhage immediately ensued, which from the distinct colours of different parts of the stream, evidently consisted both of arterial and venous blood. The discharge of blood diminished so much in a short time, that I ventured to unite the divided integuments through the whole extent of the wound, by the interrupted suture. I ordered a purging clyster to be injected, and half an ounce of *ol. ricini* to be given every three hours, till a free evacuation should be produced.

“I visited the patient about two hours after the operation and found him asleep.

“At ten in the evening I was called to him, on account of a violent hemorrhage, which the nurse had just discovered. The blood had flowed through his bed upon the floor. I immediately cut out the ligatures which were in the upper part of the wound, both to give a free issue to the blood, and also to enable me to know the true state of the hemorrhage. The blood which now issued out appeared to be venous. It flowed irregularly, sometimes ceasing for ten or twelve minutes. I applied cloths dipped in cold water to the abdomen and scrotum, and kept dabbing the wound with a cold wet sponge. His pulse was weak, and at a hundred and eight. His countenance more pale; the belly less tense; he had one stool. I left him at half past eleven, as the hemorrhage had then abated, desiring the house apothecary and my senior pupil who remained with him, to continue the application of the cold cloths till the hemorrhage should cease, and to give the *ol. ricini* every three hours.

“27th. The hemorrhage ceased at half past one in the morning.”

The patient finally recovered; and the experienced writer makes the following remarks:

“This case clearly shows, that large wounds of the omentum are attended with danger, if the bleeding vessels are not tied. As the termination was favourable, I am not sorry that the operation was performed, as Mr. Pott and Monsieur Caque have advised; but I shall never again cut off any large portion of omentum, without applying a ligature to every bleeding vessel, whether artery or vein, before I permit the remainder of the omentum to retire into the abdomen.”

A third plan of treatment consists in the excision of the diseased mass, securing the divided blood-vessels separately, by fine ligatures, and returning the parts, allowing the ends of the ligatures to remain outside of the wound.

This practice is, I believe, very generally recommended by surgical writers at the present day; but I must confess it is utterly at variance with my views of sound surgical principles. By such a course the imperfection of one of the most important cavities in the body is maintained for many days, and the patient is also subjected to the additional risk of peritoneal inflammation, arising from the presence of extraneous bodies.

In pursuing such a plan, do we not carry out the same principles which govern us in the operation for the radical cure of hydrocele? If the introduction of a seton or ligature in the cavity of the tunica vaginalis testes will cause acute inflammation, the effusion of lymph, and adhesion between the opposing surfaces of the

peritoneum, the same result may be anticipated in another cavity lined by the same membrane.

If the utility of this practice were confirmed by ample experience, I should be disposed to adopt it, although in opposition to my present views. I have searched in vain for its confirmation, by detailed accounts of cases in which such a course has been successfully pursued.

A case is published by Everard Home, in the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge, vol. ii. p. 99, in which he pursued this practice; and its result is certainly not calculated to make a very strong impression in its favour. The patient was afflicted with strangulated femoral hernia; and the writer, after describing her symptoms, &c. thus proceeds :

“ When I laid open the hernial sac in the usual manner, nothing except omentum was brought to view; but when this was spread out, and turned up towards the abdomen, a small tumour, formed by the doubling of the intestine, was discovered at the bottom of the sac, which was so much pressed upon by Poupart’s ligament, as not to admit the end of a probe to pass between them. The gut was very much inflamed, its surface was perfectly smooth, and uniformly of a dark red colour; but as mortification had not taken place, it was thought to be capable of recovery, and was, therefore, as soon as the ligament was divided, returned into the belly. The portion of omentum adhered to the orifice of the hernial sac, and was found upon trial too large to pass through the orifice which led to the abdomen; it was, therefore, from necessity, removed; this was done by dividing it in its expanded state, near the orifice of the sac, with a pair of scissors; two arteries on the cut

edge bled so violently as to require being secured by ligatures, the ends of which were brought out at the external wound and the whole was superficially dressed.

“As the portion of gut was very much inflamed, twenty drops of tincture of opium were given immediately, to lessen the irritation produced by the inflammation, and repeated at four in the morning.

“January 2d. The retching was entirely stopped, and the pain in the belly much abated. A glyster of warm water was injected, and fifteen drops of tincture of opium given in a draught, both of which were repeated at night. The glysters were only retained about an hour.

“January 3d. She was totally easy, but languid; the glyster of warm water was repeated: at ten in the evening she had a pain in the lower belly, for which she took twenty drops of tincture of opium: the same quantity of opium, in consequence of a continuance of the pain, was repeated at one in the morning.

“January 4th. The pain continued with a constant desire to make water; the belly was fomented, after which she made water freely, and this relieved the pain in the belly. At 2 o'clock she took an ounce of a mixture containing ʒvj. of infusion of senna, ʒvj. of tincture of senna, and ʒiii. of kali tartarisatum, and in an hour had a motion; her pulse was soft, and beat a hundred times in a minute; her thirst continued, but was relieved by sucking oranges. She took some panada, sago, and her usual opiate at night.

“January 5th. Had a confusion in the head, with disturbed dreams; these were considered as effects of opium, which was therefore left off. The wound had a favourable appearance.

“January 7th. The ligatures came away, and the wound was going on kindly’.

“January 9th. She became restless, feverish, languid, and had no appetite for food; all these symptoms increased on the 10th, and on the 11th at night, she died, exactly ten days after the operation.

“On inspecting the body after death, the strangulated portion of intestine, extending to two inches and a half of the ileum in length, was found to have exactly the same appearance as it had when exposed during the operation. Its internal membrane was extremely vascular, and had an inflammatory exudation of coagulating lymph adhering to different parts of its surface. There was no appearance of inflammation on the omentum. So large a portion of it had been removed during the operation, that only an inch of its anterior part remained attached to the transverse arch of the colon. In several parts of the abdomen there were slight adhesions between different convolutions of the intestines.”

In this case the symptoms were, from the beginning of the attack, those of an inflamed intestine; the operation arrested the progress of the inflammation, and prevented mortification from taking place; but the inflammation had proceeded too far to admit of resolution.

The death of the patient is referred to enteritis, induced previously to the operation. But whether the ligatures, by acting as extraneous bodies in the abdominal cavity may not have an agency in increasing the inflammation, and producing those adhesions between different convolutions of the intestines, is undetermined.

In the valuable work of Astley Cooper on the Ana-

tomy and Surgical Treatment of Inguinal and Congenital Hernia, I find the following remarks in reference to the treatment of diseased masses of omentum.

“When the intestine has been returned, the omentum is to be examined with attention, and if it is in a healthy state, or not of considerable bulk, it should be returned into the cavity of the abdomen by as slight a pressure as possible. But if it is very bulky, a part of it should be removed, which may be done with the knife with great freedom, and if properly managed, without any danger. I have myself removed it, in several instances, without the patient seeming to suffer any subsequent inconvenience.

“The surgeon raising the omentum, whilst an assistant grasps it higher up, to prevent its return into the abdomen, cuts it off near the mouth of the sac. Some small arteries always bleed, which are to be secured by a fine ligature; and when the hemorrhage is stopped, the omentum is to be returned into the abdomen, with its divided surface applied to the mouth of the sac, from which the ligatures are suspended, and it thus forms a plug which shuts up its cavity.” P. 32.

The recommendation of a surgeon so justly distinguished as the writer of the above quotation, is entitled to high respect, and it is with diffidence that I offer a few plain objections to the practice here proposed.

The omentum to be treated, so far as I understand the case, is not in a state of mortification, neither is it fixed by adhesions within the sac. The directions given for its excision lead us to infer that it lies loosely in the sac, and that it must be secured by an assistant to prevent the danger of its retrocession into the abdominal cavity before the ligatures are applied to the bleeding

vessels. After this, the remaining omentum "is to be returned into the abdomen with its divided surface applied to the mouth of the sac, from which the ligatures are suspended." Here let me inquire, what security has the surgeon, that the omentum thus returned, will not recede from the mouth of the sac, and carry the ligatures within the abdominal cavity. When we consider the powerful peristaltic action, in the arch of the colon, to which the omentum is attached, in every act of defecation, I can discover no rational ground of hope for its being retained precisely at the mouth of the sac. If it be deemed expedient by many surgeons, to stitch the mesentery to the side of the wound in case of a mortified spot on the bowel, to prevent its retrocession, it seems to me very hazardous to trust a portion of omentum, which is not fixed by adhesion to the sac, and which is subjected to all the chances of displacement from the motions of the intestine.

If the recommendation of Cooper had alluded simply to a portion of irreducible omentum, which had been firmly fixed by old adhesions to the hernial sac, the safety of the practice could be more readily admitted. My own limited experience supplies a case of this kind, in which a portion of omentum in this condition was excised, a ligature was applied, and the patient recovered.

CASE XXIII.

Entero-Epiplocele—Expatriated Omentum—Excision—Cure.

5th mo. 10th, 1828. I was called this day, in consultation with my friend Dr. Janney, to see the widow H., about sixty years of age. She has had a tumour in the right groin for twenty years, and says that she has been frequently subject to *colic*, which has generally been relieved in a few hours. Her present attack occurred suddenly, at about 3 o'clock, P. M., on the 7th inst., since which she has been extremely ill, with pain, constipation, and vomiting. Her countenance was sunken and dejected; her pulse feeble; her hands and wrists cool, and dark coloured; her tongue moist; and she had but little tenderness of the abdomen, and none of the hernial tumour. Her intellect was clear, and she could not believe that the tumour in the groin had any thing to do with her complaint. However, on receiving a very positive assurance of our belief that all her present distress was the result of incarceration of the bowel, she finally consented to the operation. With the assistance of Dr. Janney, and three of my pupils, I proceeded, between five and six o'clock, P. M., the patient having previously taken an opiate. The tumour was of considerable size and an oval form. I made a crucial incision, dissected up the flaps, and soon came down on a hernial sac. It was remarkably thin and transparent. I think I never saw one more so. The parts underneath appeared very much like intestine, and

although I had previously expressed the opinion that the hernia would prove to be entero-epiplocele, I now really thought that I had been mistaken. The sac was opened readily. No fluid, or scarcely any, was contained in it. On laying it open in the usual manner, a considerable mass of old, expatriated omentum was exposed: but just as I had anticipated, there was no appearance of the intestine. I now opened through the crown of the arch of omentum, and finally found a small slip of intestine that had been completely concealed by the omentum. The intestine was very dark coloured, but entirely free from cadaverous smell. I now felt for the stricture, found it very firm, and divided it with the bistoury. I then passed my finger by the side of the bowel into the abdomen. I cut off the principal part of the expatriated omentum, and secured one vessel by ligature, but did not attempt to return any portion into the abdomen. The patient did not lose one ounce of blood, and the operation was completed in about five minutes. At the close, she appeared rather fainty. We put her to bed, and placed pillows under her knees; directed quietness; one grain of opium every four or six hours. Two of my pupils remained constantly with this patient—who was extremely ill—and as will be perceived, a note was made of her symptoms every four hours.—*Night*, 12 o'clock. Pulse 108. The patient has been tolerably quiet since the operation, and has slept pretty well since 9 o'clock, when she took one grain of opium. Her bowels have been opened two or three times, and she has also discharged flatus. Diet of barley-water and gruel in small quantities, and frequently.

11th. *Morning*, 11 o'clock. The patient has awak-

ened from a refreshing sleep of three hours, nearly. She is somewhat thirsty. Pulse 100, with strength and fullness.—*Evening*, 6 o'clock. Dr. Janney saw her. Some reaction took place about 2 o'clock, P. M., which was diminished by applying cool vinegar to the face and arms. She has had occasional sleep. She took a second grain of opium at 4 o'clock. Her pulse was now 104; her abdomen tympanitic. She has just had an evacuation.—8 o'clock. Pulse 106; skin natural. She complains of a sense of tightness at the pit of the stomach. She has had some sleep. Directed castor oil $\bar{3}j$. to be taken every four hours, with mint-tea.—10 o'clock. Her bowels have been opened; one grain of opium exhibited.—11 o'clock. Pulse 108, and full. She has had another evacuation; is restless, and not inclined to sleep.—12 o'clock at night. Pulse 120; skin rather hot and dry. She is wakeful, says she feels faint, and complains of excessive thirst.

12th. *Morning*, near 3 o'clock. Pulse 124, and irritated. Her bowels were opened at 2 o'clock, the discharge was quite natural. She has thirst, and dozes at intervals; skin husky.—Near 5 o'clock. The last dose of oil was ejected. This medicine was discontinued. Pulse 126, and irritated; tongue furred, and florid at the point. The patient is very restless.—7 o'clock. Pulse 126, and fuller. The bowels have been freely opened, and the patient is not quite so restless. She complains of occasional pains in the epigastrium.—9 o'clock. Dr. Janney and myself saw the patient together, and examined the wound, which presented a favourable aspect. Ordered an application of fresh lard. The abdomen is perfectly soft; pulse 120; tongue slightly furred. She has had a copious evacuation, and complains of insa-

tiable thirst. Ordered lime-water and milk every half hour, and sodaic powders. If restless, fifteen drops of laudanum to be given. Gum arabic in solution, as a drink.—12 o'clock, *Night*. The patient has slept well since 10 o'clock. Pulse 128. She complains of uneasiness at the pit of the stomach,

13th. Dr. Janney saw the patient. Pulse 132; tongue furred and dry; thirst very great. Flatus discharged from the bowels. There is slight tenderness at the umbilicus. The uneasiness at the epigastrium continues. The patient states that she had been affected with faintness, and a disposition to vomit, for a week previous to her attack. A mixture of camphorated spirits and tincture of opium was ordered to be applied warm, on flannel, to the stomach.—*Evening*, 4 o'clock. Pulse the same. The patient is very restless. She took fifteen drops of laudanum.—6 o'clock. Pulse 130. She has had a little sleep, and copious natural evacuations. Half past 7 o'clock. Dr. Janney and myself saw the patient together. Pulse 130; tongue furred, but moist; tenderness of the epigastrium upon pressure; the thirst continues. Directed fifteen or thirty drops of laudanum according to the restlessness, every four or six hours. A blister to the epigastrium. Neutral mixture to be given every two hours, if the pulse continues high, and skin hot. Chicken-water—9 o'clock. The blister applied, and the neutral mixture given.—Near 10 o'clock. Fifteen drops of laudanum given.

14th. *Morning*, past 3 o'clock. Skin hot and dry; tongue furred and dry; pulse 135. She has slept well for about an hour.—7 o'clock. The patient's condition has been pretty uniform since half past 4 o'clock this morning. Pulse between 111 and 113; tongue moist;

skin less hot. She passes her urine freely, and says that the uneasy sensation at the epigastrium has left her. The abdomen is soft, and there is no more pain on pressure than usual. She has had two evacuations.—Half past 8 o'clock. Dr. Janney and myself saw the patient. Pulse 112; the abdomen soft; the wound looks well; tongue somewhat dry, but disposed to clean at the tip; skin rather warm.—*Evening*, 4 o'clock. The patient is quite comfortable. She has slept tolerably well at intervals, and complains of no uneasiness at the epigastrium. Tongue and skin as before; pulse 113. 7 o'clock, P. M. Dr. Janney and myself called to see the patient. Pulse 120. The thirst continues. She complains chiefly of her uneasy position. Directed rennet-whey, &c.

15th. *Morning*, 4 o'clock. The patient passed the night quite easily and composedly, sleeping almost constantly after 12 o'clock. She has taken the neutral mixture and the rennet-whey. She has had no discharge from the bowels. Pulse 112. No pain on pressure. No change in tongue or skin.—Half past 8 o'clock. Pulse 106. Directed castor oil $\bar{3}$ ss. every four hours, which produced a free and natural evacuation.—*Evening*, half past 4 o'clock. An exacerbation of fever came on. 7 o'clock. Dr. Janney and myself called. Found the abdomen soft, and the tongue partly cleaned. Thirst diminished. Directed some nourishment, and the omission of the saline mixture, unless the skin is hot and dry. To commence, early in the morning, with an infusion of serpentaria and chamomile, a small wine-glassful to be taken every hour.

16th. *Morning*, 8 o'clock. Pulse 108; tongue clean and moist. The patient passed a comfortable night. She

took twenty drops of laudanum.—*Evening*, 7 o'clock. Pulse and tongue in the same condition. Every symptom favourable. She has had a free, natural evacuation without medicine, and has a desire for food, such as asparagus, &c.

17th. *Morning*, 8 o'clock. Pulse 100; tongue as yesterday. The patient passed the night comfortably without laudanum.—*Evening*. She is still in the same condition.

18th. Pulse 106; tongue as before. The patient rested well, and had a free evacuation this morning. She had taken a spoonful of oil at bed time. The infusion of chamomile and serpentaria was rejected by the stomach this morning, and was therefore omitted. Ordered infusion of columbo and orange peel, a wine-glassful every two hours. The granulations in the wound appear white and not healthy. Directed bark to be sprinkled on them.

19th. The patient says she feels well. Pulse 96. Tongue natural.

20th. *Morning*. Her bowels are free.—*Evening*. Pulse 100. Her medicine has not agreed with her stomach. Ordered infusion of bark, a wine-glassful every two hours, to be taken early in the morning.

21st. Pulse 96. The patient rested well. Her bowels were moved at 12 o'clock.—*Evening*. Pulse 80, and every thing favourable.

6th mo. 4th. The patient has been doing well since the last date, and to-day the ligature came away by twisting it. This patient recovered completely.

Remark.

The unpleasant symptoms in this case may have been

produced by the ligature; but on this point my opinion is not decided.

It is a source of regret to observe a number of writers, some of them of the highest character, all following in the same train; all recommending the practice of excising the omentum, and applying ligatures to the bleeding vessels, without giving one instance to prove the safety of the plan. Is there not a danger, by this course, of a proposition, vague in the first instance, being converted by frequent repetition into a settled rule of practice, until melancholy experience may prove its unsoundness and danger?

The question then arises, what is to be done with expatriated omentum? If a small portion presents itself, and can be conveniently cut off, no danger need be apprehended from hemorrhage; but when a large mass is encountered, it has generally been my practice to allow it to remain undisturbed.

The following cases furnish examples of this condition of the omentum, and of the treatment to be pursued.

CASE XXIV.

Entero-Epiplocele—Expatriated Omentum—Excision—Cure.

10th mo. 28th, 1826. I was called this day in consultation with Dr. Ruan, to see the wife of A. S. The patient is about thirty-six years of age. About seven years ago, after a great effort in lifting, she became

affected with a femoral hernia on the left side. The protruded parts have never been completely reduced since that time. She has had several spells of colic, as she calls it, with an increase in the size of the tumour, but they have always gone off, until the present attack, which has had forty-eight hours continuance. The tumour is pretty large.

Dr. Ruan was called last evening. He bled her ad deliquium, and attempted the taxis. He says that there was a considerable reduction in the size of the tumour in consequence of this attempt. Laxative injections were given, and he ordered an opiate enema; but it seems that she passed a most wretched night. She has vomited up every thing from the commencement of the attack; and her bowels are obstinately confined. I found her in great distress, with extreme tenderness in the tumour, and in the abdomen; complaining of severe pain in the stomach, extending toward the bottom of the abdomen. The pain appeared to come on in paroxysms, during which she suffered excessively. She rejects anodynes given by the mouth, and, what is truly remarkable, *anodyne injections pass away from her immediately.*

The operation was proposed, and Drs. Physick and Barton were called in consultation. We gave her opium by the rectum, and tried some in the form of pill. We then prepared for the operation, which I performed about fifty-two hours after the commencement of the strangulation, assisted by my medical friends.

The patient was placed on a table. By flexing the thigh on the pelvis, it was found that the skin over the tumour was quite flaccid. Dr. Physick aided in pinching it up, and I then passed the sharp-pointed bistoury through

it, with the back of the instrument turned toward the tumour, and, at one stroke, made a longitudinal incision nearly long enough for my purpose. I did not make a crucial incision in this case. By the aid of the director and bistoury I soon laid bare, as we supposed, the hernial sac; and, pinching up a small portion with the dissecting forceps, cautiously made an opening into it. What appeared to be the sac was then laid open in the usual manner; but there was still a thin layer, resembling cellular membrane, laying over the strangulated parts. This was opened in the same manner, and then, for the first time, a small quantity of fluid escaped. The omentum was now exposed to view, and, on turning it aside, a small slip of intestine, of a dark chocolate colour, appeared; *but there was no cadaverous smell*. I passed down my finger, and feeling a very tight stricture, I very carefully divided it in a direction upward and a little inward, with my blunt-pointed bistoury, which was guarded as usual, with a rag wrapped round the greater part of the blade.

I now returned the intestine into the abdomen; but what was to be done with the omentum? I remarked to my friends that it had been so long *expatriated* that I should be afraid to put it into the belly. It was, therefore, determined to cut the greater part of it away, which I did, removing also, in the same manner, a portion of the old sac, which stuck up in the wound like a piece of buckram. There was but little bleeding. I pushed the remaining portion of the omentum towards the opening from the abdomen, hoping that it would inflame, and plug up the aperture, so as to form a natural truss.

Just before the completion of the operation, the wound

was suddenly filled with what at first appeared to be blood; but, on closer inspection, it proved to be nothing more than the same kind of fluid usually contained in the sac, which, mixing with a little blood from the omentum, really gave, at first, the idea of considerable hemorrhage.

Two sutures were used in dressing the wound, leaving a small opening between the edges, at its most dependant part. The patient was placed on her back, in bed, with her knees bent and supported by pillows. One grain of opium was given, and directed to be repeated every four or six hours, according to her restlessness.

Evening. I saw her between five and six o'clock, and again after ten o'clock to-night. She is greatly relieved from pain, although she still has some slight paroxysms. She has considerable thirst, and vomits occasionally, after drinking. She attributes the sickness to the opium, which, she says, always disagrees with her. She takes barley-water. Her pulse is 100 in the minute. The temperature of her skin is nearly natural, and her tongue is slightly furred. She has less pain on pressure, in her abdomen. Her countenance and spirits appear good. Directed fifteen drops of the black drop every four or six hours, if restless; but, if composed, the anodyne to be omitted.

29th. *Morning*, 9 o'clock. The patient slept well through the night. Her countenance is good; pulse 80, soft and full; abdomen flaccid, and its tenderness greatly diminished. Directed half a pint of boiling water to be poured on sup. tart. potass. $\bar{3}$ ss. et manna $\bar{3}$ j. A tablespoonful to be given frequently till it operates; and in case of pain, fifteen drops of the black drop to be also

given.—*Evening*, 5 o'clock. As I was absent from the city, Dr. Barton saw the patient for me. Her abdomen was tumid from distension of the bladder. The catheter was introduced, and a large quantity of urine drawn off. Pulse and skin natural. The dose of crem. tartar and manna was increased to a wine-glassful, with directions that if it did not operate by 10 o'clock, she should take a wine-glassful of an infusion of senna every hour.

30th. *Morning*, 10 o'clock. Dr. Barton again visited the patient. The crem. tartar produced great pain in the bowels, followed by an evacuation at $\frac{1}{4}$ past 9 o'clock last evening, and, as she was restless, fifteen drops of black drop were given her at 10 o'clock. She rested well through the night. Her pulse and skin this morning showed some slight febrile excitement. Her retention of urine still continued, but, as there was no desire to evacuate it, the catheter was not introduced. Serum, slightly tinged with blood, is discharged from the wound; this is supposed by Dr. Barton to come from the cavity of the abdomen. The Doctor directed a bread-and-milk poultice to be applied over the wound, and that her diet should be barley-water.—*Evening*, 8 o'clock. Dr. Ruan and myself visited the patient this evening. Pulse 80; skin natural. I drew off the urine with the catheter. The patient passes flatus freely.

31st. *Morning*, 9 o'clock. The patient has passed a very good night, except that she was troubled with flatulency. Pulse 88; skin and countenance natural. There has been no evacuation from the bowels since last report. I directed her to take an ounce of castor oil, and to drink oatmeal-gruel. The catheter has to be used regularly, morning and evening.—*Evening*, 8 o'clock. The patient has not yet had any evacuation.

11th mo. 2d. The tenderness of the abdomen is nearly gone. Directed castor oil ʒi. , and for diet, oatmeal-gruel, tapioca, &c.

3d. Pulse 80, soft and full; tongue clean; skin natural. The wound has partly healed by the first intention, and the remainder is suppurating. The patient is permitted to lie on her side, and to eat the soft part of an oyster every hour.

4th. Pulse 80; skin natural; tongue clean. The patient has had three evacuations since the last report. The abdomen is flaccid, and entirely free from pain on pressure. This patient perfectly recovered.

CASE XXV.

Strangulated Femoral Hernia—Dark and hardened Omentum—Excision—Cure.

11th mo. 29th, 1823. A poor widow, aged about sixty-four years, was attacked about a week ago, with strangulated hernia, which was regarded by her medical attendant as colic, until, finding his remedies fail, he was led, after several days, to make a closer investigation of the case; when he discovered a tumour in her left groin.

I saw her, for the first time, yesterday afternoon and evening. Her stomach had been retentive for two days previously; it even retained castor oil very well; but her bowels were obstinately constipated. There was no tension or unusual tenderness of the belly, although she complained of pain and distress high up in the abdo-

men. Her pulse was rather frequent; but her tongue and countenance had not an unfavourable appearance. At our last visit in the evening, the patient seemed to expect an evacuation from the bowels, and we concluded to exhibit some castor oil, with an opiate, and to leave the case till morning.

On visiting her this morning, we found that she had vomited the oil, and her whole aspect was more unfavourable. I therefore gave her an opiate, and proceeded to the operation, assisted by Drs. Uhler and Hewson. The tumour was rather large for a femoral hernia. I made a crucial incision, dissected back the corners, and divided the layers of fasciæ with considerable expedition, by the aid of the director, assisted occasionally by the handle of the scalpel. The sac was opened in the usual manner, and a small portion of bloody fluid escaped. On enlarging the orifice, some very dark-coloured and hard omentum came into view, one portion of which felt almost like bone; but no intestine was apparent. I turned aside the omentum, and then discovered a small portion of very dark-coloured bowel. As the omentum was considerably in the way, I cut it off. It did not bleed, and yet there was not the least cadaverous smell from the sac. On examining the stricture, it was found very firm. I very cautiously divided it with the blunt-pointed bistoury, until I could pass my finger into the abdomen. It was now found that the omentum about the stricture was firmly adherent to the intestine. With my finger, I cautiously separated the adhesions, and returned the parts into the abdomen. I also separated some adhesions within the cavity. The wound was dressed with adhesive strips. The patient bore the operation well.

Evening. The patient presents rather a discouraging appearance. Her countenance is more sunken, and her tongue somewhat dark. She has slept almost constantly since the operation. Pulse firm, about 100. There is still great uneasiness in the abdomen, with weakness of stomach, and considerable inclination to vomit. The bowels have not been opened.

30th. *Morning.* Pulse 100, full and soft; temperature natural; tongue moist, furred, and less dark; countenance improved. The patient vomited twice during the night, and also discharged flatus per anum twice. She slept well, but still complains of pain, and a sense of fulness in the stomach and abdomen. She took one grain of opium, and three-fourths of a Seidlitz powder, during the night. Directed one-fourth of a Seidlitz powder to be taken every half hour.—*Evening.* Pulse 112, less full and regular. The patient has slept considerably, has vomited twice, and has had one fecal discharge. The pain in the abdomen continues.

12th mo. 1st. The patient has had five evacuations. She took one grain of opium since last visit. Pulse 100; tongue moist. Pressure on the abdomen gives her pain, but the belly is flaccid.—*Evening.* Pulse 96; tongue furred; no tension of the abdomen. The last stool took place about 9 o'clock this morning. The Seidlitz powder has been given regularly, and the patient has taken one grain of opium. She complains of great pain about the umbilicus. Ordered to continue the Seidlitz powder until the bowels are moved, and to take a grain of opium every six hours, if restless.

2d. Pulse 100; tongue somewhat dark and dry; face flushed; some tension of the abdomen, but no pain. The patient complained of difficulty in passing urine, and the

catheter was introduced. Ordered to omit the opium and continue the Seidlitz powder.—*Evening*. Pulse 112; tongue moist; skin natural; tension and pain in the abdomen; no stool. Ordered castor oil, a table-spoonful every two hours, and an opiate, if restless.

3d. Pulse, tongue, and skin continue in the same state. The patient vomited once in the night, passes urine freely, and has had natural stools. The abdomen is less tense, but is still painful. Treatment continued. *Evening*. The patient has passed a considerable amount of flatus, but has had no stool. The pain in the abdomen slight. Treatment continued, and an enema of flaxseed-tea directed.

4th. Pulse 100; skin natural; tongue somewhat dry. The patient has had three stools. The pain and tension of the abdomen slight. Treatment continued. Ordered a diet of chicken-water, whey, &c. The wound dressed with simple cerate.

5th. Pulse 112; skin and tongue as at last visit. The patient has had about five discharges from the bowels. The tension of the abdomen is diminished, but the pain continues. Ordered to omit the oil, but to continue the Seidlitz powder, and if necessary, the opiate.—*Evening*. Tension and pain diminished; pulse 100. The patient has had several stools without medicine. Treatment continued.

6th. Pulse 100; skin natural; tongue rather dark and dry; slight pain in the umbilical region; very little tension of the abdomen. The patient had one stool last evening. She rested well through the night. The wound is suppurating moderately. Ordered the Seidlitz powder to be taken three times a day. Treatment and regimen continued.

7th. Pulse 100; the tension and pain have ceased; the bowels act freely. Treatment continued.

8th. Pulse 90; wound suppurating moderately. Every thing looking favourably. Treatment continued.

This patient recovered perfectly.

CASE XXVI.

Irreducible Entero-Epiplocele—Stercoraceous Vomiting Operation—Death.

2d mo. 15th, 1819. I was called by Dr. Dewees to see, with him, a widow lady aged sixty-seven years. She had been afflicted with hernia since the birth of her first child, which must have been many years ago. She represented that she had always, since that time, had a tumour in the part, which was generally about the size of an egg, but sometimes larger. She had been labouring under strangulation since the evening of the tenth instant, when, in a fit of coughing, the part became strangulated. Dr. Dewees had ascertained the existence of hernia, a few hours before I was called, and immediately requested a consultation. On examination, at this time, he found the matter which she had thrown from her stomach, stercoraceous.

On my first visit I was struck with the peculiar situation of the tumour. It appeared to be in the upper part of the thigh, extending across it, and I could trace it along the internal abdominal ring, *as is usual in inguinal hernia*. I was strongly inclined to believe that it

was femoral, but the size of the tumour exceeded that of any femoral hernia I had ever seen before.

After deliberating on the case, Dr. Dewees and myself concluded to recommend the operation *at once*, and it was most readily submitted to by the patient. An anodyne enema was given, and two grains of opium were administered by the mouth. At this time the patient had a tolerably good pulse, and no cold or clammy sweats; her tongue was rather dark; and her bowels somewhat tender to the touch.

I made a crucial incision through the integuments, and dissected up the four flaps; then, principally by the aid of the grooved director, I divided several layers of fascia, and after dissecting carefully downward, I at last opened the sac, and exposed a large mass of omentum. I found considerable difficulty in this part of the operation, in consequence of there being no fluid between the sac and the omentum. After I had fairly uncovered the omentum, still greater difficulties assailed me; for I found this mass firmly impacted together by pretty strong bands of adhesion: there was no appearance of intestine. I had no doubt of the existence of strangulated bowel, but the question was, where to find it; and I concluded that the only way to get at it was to lay open the omentum. After having penetrated for some depth through the centre of the mass, I at last found an aperture, through which I pushed my finger, and felt the bowel, contained as it were, in another sac. I now dissected through the omentum more freely, and brought a portion of intestine into view. It was of a very dark colour. Some fluid, of a bloody colour, was contained in this inner sac, *but it was free from the cadaverous smell of a mortified part*. I pushed my finger

down by the side of the bowel and felt a stricture, which I divided inwards, in a direction towards the pubis, and pretty readily returned the bowel into the abdominal cavity.

The vomiting ceased, and her distress left her immediately afterwards, yet her strength gradually declined. She was much disposed to coma. Surgical aid, in this case, came too late; for, though the patient was certainly relieved by the operation, in forty-eight hours afterwards she died. The omentum was permitted to remain where we found it. No post mortem examination took place.

CASE XXVII.

*Irreducible Entero-Epiplocele—Stercoraceous Vomiting—
Operation—Intestine black—Death.*

11th mo. 20th, 1822. I was called this day, in consultation with Drs. Griffith and Hewson, to see the Widow L., an elderly woman who had been affected with an irreducible femoral hernia of the left side, for nineteen years. It was unusually large, and of an oblong shape, extending, I suppose, at least eight or ten inches from above downward, and about six inches in width. At its lower part it formed an irregular apex.

On the morning of the 17th instant, as she rose from her bed, she was suddenly attacked with severe pain, and an additional descent and sudden strangulation took place. Immediately after this, she had an evacua-

tion from the bowels. Various attempts were made by Drs. Griffith and Hewson to reduce the part, but without success; and ultimately I was called in consultation.

When I saw the patient, her countenance was good and lively; her tongue moist, slightly furred, and rather whitish than dark. The abdomen was soft and natural, and was very little sensible to pressure, except in the vicinity of the stricture. The tumour was painful when pressed. She complained of general distress. Pulse about 130 in the minute. On examining the vomited contents of the stomach, they were found completely stercoraceous. This patient reminded me very forcibly of the preceding case. On examining the tumour, I thought I very distinctly perceived a fluctuation. As the patient at once consented to the operation, Dr. Hewson, who was the operator, commenced the necessary preparations. A full dose of laudanum was given.

A crucial incision was made over the most prominent part of the tumour, but was not extended over the whole tumour. After dividing the integuments, Dr. H. soon came down upon a firm fascia, and there appeared a small point, rising rather above the general level, which, on being touched, gave the impression to the finger of a fluctuation underneath. It was concluded to open the sac at this point, which was cautiously done.

The sac was found to be remarkably thick. All the layers of fasciæ appeared to be completely identified, and had formed an investment of the thickness of a quarter of an inch. This, I presume, depended on the long continuation of the disease in an irreducible form. When the sac was laid open, a mass of omentum was displayed, through which several small apertures were

discovered, and through these apertures passed a small portion of bloody-coloured serum, such as we often find in a hernial sac.

The case was less embarrassing than that just detailed, because the serous and bloody fluid which passed through the apertures in the omentum clearly indicated the course that ought to be pursued. The Doctor broke through the arch formed by the omentum, and brought into view a portion of intestine that, by *candle-light*, appeared *quite black and mortified*; but it was destitute of any cadaverous fœtor. The stricture was now divided directly upward, so that the finger could be passed into the cavity of the abdomen, by the side of the bowel; and, with rather more difficulty than common, the intestine was reduced. The patient supported the operation very well. The omentum was permitted to remain undisturbed.

21st. I saw her again in consultation. She had passed a more comfortable night than might have been expected, but still the bowels were not opened, and yet the sufferings of the patient were greatly diminished.

22d. We found her this morning, in articulo mortis. She has had no evacuation of the bowels since the operation.

This patient lived, contrary to all expectation, for several days longer, but finally died.

MORTIFIED OMENTUM.

The several methods of treatment, which relate to the excision of expatriated omentum, have also been

proposed, when this part is in a state of mortification. These have been so fully examined in the preceding section, that it is deemed unnecessary to recapitulate them. Believing that the excision of a large mass of omentum is attended with risk by any method, I have pursued the practice of leaving the mortified portion in the wound, relying upon the efforts of nature to effect its separation from the sound parts. This process may be assisted by the gradual, yet very gentle pressure of a ligature around the root of the diseased mass, in such a manner that the patient may at any moment unloose it, if he should feel pain or sickness.

This plan has been strongly recommended by Hey, and pursued by him successfully in three cases detailed in his valuable work.

A case fell under my care some years ago, in which this practice was successfully adopted. It was published in the Eclectic Repertory, Vol. I. p. 13, from which it has been extracted.

CASE XXVIII.

Entero-Epiplocele—Mortified Omentum---Sloughing of the mortified mass—Recovered.

On the third day of the Third month (March,) 1810, my immediate attendance in consultation was requested by my friend Dr. Samuel Tucker, of Burlington, N. J.

The patient was a farmer of middle age, who led a laborious life, was of temperate habits, and the parent of six children.

He had been occasionally afflicted with scrotal hernia for fifteen years, but had never worn a truss, or disclosed his situation to any person. When it proved troublesome, he had been in the practice of reducing it without difficulty.

On the morning of the 28th of Second month, while in the act of lifting a heavy log, a portion of the abdominal contents was suddenly protruded through the ring, and became strangulated. He had an alvine discharge immediately after.

From the period that Dr. Tucker first saw him, until I was called, he had diligently resorted to the most approved plans of reduction; viz., taxis, venesection, applications of ice to the tumour, tobacco injections, warm bath, &c. &c., but all without effect.

When I saw him, his chief distress appeared to arise from vomiting and hiccough; the latter always occurred after drinking. His pulse was remarkably tranquil; tongue moist, and but slightly furred; no tension or tenderness in the abdomen; and it was not until the latter part of that day that he was sensible of darting pains, which occasionally extended from the strictured part towards the abdominal cavity. The tumour was of considerable size, and rather firm to the touch.

As Dr. Tucker had decided on the necessity of the operation previously to sending for me, it only remained for us to obtain the patient's consent; but this was rather difficult, for he was very indecisive, sometimes partly consenting, and then refusing. It was night when I visited him, and under all circumstances, it appeared as if nothing could be done until daylight. The mildness of his symptoms reconciled us more readily to this conclusion. He had slept well the preceding

night without an anodyne. A small enema containing tincture of opium was given him, and directions were left to repeat it in an hour, if the patient should be restless.

Dr. Tucker and one of his friends saw him about sunrise. He walked from his bed-chamber into the common room, handed chairs, invited them to sit down, said he had passed a good night, and in fact had quite abandoned the idea of having any operation performed.

I saw him soon after; and we again endeavoured to explain to him the extreme danger of his situation, and he at last consented to the operation.

An opiate was exhibited, and he was placed on a table. An incision was made through the skin, sufficiently large to allow a free examination of the parts about the neck of the hernial sac. While carefully dissecting through the integuments, three arteries were divided and secured by ligatures; the largest was found running directly across and just below the neck of the tumour. Several tendinous stricturing bands were brought into view and divided; but after every apparent external cause of stricture was removed, the prolapsed parts were still irreducible. The incision was extended along the scrotum nearly to the bottom of the tumour, and the hernial sac was laid open. A fluid of a bloody colour issued from it.

It was now evident that the chief seat of the stricture was in the neck of the sac; it was contracted firmly round the protruded parts. The tip of my finger was introduced as a director for the blunt-pointed bistoury, with which it was readily divided.

Its contents consisted chiefly of omentum, of which

there was a much larger portion than would have been imagined from the size of the tumour. I should guess there might have been nearly eight ounces. Along with this, and lying in the very centre of the omentum, was a portion of intestine, which passed about an inch and a half beyond the stricture. It appeared nearly natural, but the omentum was in a very different state; a considerable part of it was sphacelated, particularly its exterior surface, which was quite black, and its vessels were greatly distended with coagulated blood. Some other portions were of a light mahogany colour, and were brittle when placed between the fingers. The central part of the mass was chiefly natural.

The intestine was speedily reduced; but for reasons to be hereafter assigned, the omentum was left in the wound. Three sutures were used in uniting the lower part of the incision, so as to close it as nearly as was practicable without compressing the omentum. Soft and light dressings were applied over the whole.

The patient appeared faint about the close of the operation; he was presented with a little wine and water, but it was rejected by the stomach. He was now placed in bed, and soon sunk into an easy and profound sleep. He was in this state when I left him, about an hour and a half after the operation. His pulse was fuller and yet free from tension.

A very light diet of chicken-liquor, barley-water, &c. was directed. Also *ol. ricini*, half an ounce every two hours until it operated.

In a letter from Dr. Tucker, he reports:

“Our patient rested well the night after the operation. He took four or five spoonfuls of castor oil; it

began to operate at four o'clock in the morning, and relieved his bowels five or six times. I left directions in the evening, that if the oil operated excessively, it should be checked by taking five drops of laudanum. His wife gave him the laudanum about noon the next day.

"Monday evening, 5th. His bowels had not been moved since noon. I directed him to take the oil again until it operated. No fever; pulse 75.

"Tuesday morning, 6th. Rested well last night; no fever or pain; pulse 75. Castor oil has operated twice.

"Evening—the same.

"Wednesday morning. Did not sleep well last night. When disposed to sleep, started, which gave him some pain, and prevented its recurrence for some time. He does not, however, appear to be worse. No fever; pulse 75. Takes chicken-broth, barley-water, &c."

On the 11th of the month I visited him in company with Dr. Tucker. He was then perfectly free from pain and fever; no tension or tenderness in the abdomen; union, by the first intention, had taken place in the part of the wound approximated by sutures; and the living omentum situated within the wound, and in contact with the edges, appeared to have adhered to them, and to have closed the cavity of the abdomen.

Subsequent information from Dr. Tucker enables me to state, that on the 18th the last portion of the unsound omentum sloughed away, leaving the living part divided into two distinct portions, suspended from the wound by two necks.

On the 21st, a ligature was applied to one half the omentum, in the manner recommended by Hey; viz.,

rather slight at first, and increasing gradually as the patient could bear it. On the 25th it was perfectly black and flaccid, and was removed by scissors. On the 26th a ligature was applied to the remainder, and at this time the wound had cicatrized, except where the tumour was suspended from it. In both cases there was a considerable oozing of blood after the omentum became black, but surrounding the part with lint put a stop to it. On the fifth day from the application of the last ligature the tumour was removed.

In about five weeks after the operation the patient began to walk about the house; and in eight weeks he resumed his agricultural avocations, and ploughed a large field for the reception of Indian corn. Since this period he has enjoyed very excellent health, and wears a truss to guard him from future danger.

It has been urged against this practice, that the sloughing of a large mass of omentum may cause great derangement of the parts within the abdominal cavity. That the adhesions formed about the ring, may draw the stomach and arch of the colon out of their natural position, and the patient may ever after be subject to those afflictions which depend on a displacement of vital organs.

Instances are on record of patients who have been obliged to walk with the body bent forward, from this cause; and who have been obliged to take their meals in this posture, to prevent the immediate rejection of their food.

These cases are, however, exceedingly rare, and are not even noticed by many experienced authors who

have written on hernia. Numerous instances of irreducible hernia present themselves, in which large portions of omentum have been firmly fixed in a hernial sac for many years, without producing these distressing consequences. Is it not rational to conclude, that in a large majority of cases of this kind, the system exerts that wonderful power with which it is endued, of eluding difficulties, and becoming inured to conditions which *a priori* we might suppose highly injurious?

It is not intended, however, to convey the idea, that this practice is entirely free from objections; but that it is attended with less risk than any other plan which has been proposed.

It has been previously stated, that a portion of bowel frequently descends behind an irreducible omental rupture, and there becomes strangulated. If the surgeon should succeed in reducing the intestine by taxis, the omentum which remains in the sac may still be subjected to a stricture, by which its vitality will be destroyed. Under these circumstances, an abscess is formed, through which the diseased mass is discharged. The inflammation which attends this process, may produce adhesions about the neck of the sac by which it will be effectually closed, and a radical cure thus effected.

A case of this description fell under the care of my friend and former pupil, Dr. Thomas Yardley. An account of which he has kindly furnished me for publication.

CASE XXIX.

Gangrenous Omentum discharged by Abscess—Radical Cure.

“3d mo. 20th, 1826. About noon this day I was called to visit S. C., a widow, aged about thirty-five years. I found her complaining of intense pain in the cavity of the abdomen, attended by stercoraceous vomiting and constipation of the bowels. These symptoms induced me immediately to suspect strangulated hernia, and on inquiry, I found that, though unacquainted with the name and nature of a ‘rupture,’ she had observed a lump about the size of a walnut in her left groin for the last six years, ever since the birth of her youngest child. She stated that it gave her little or no inconvenience, except in damp weather, and when she was much fatigued. About three years since, she had an attack similar to the present; it, however, lasted only twenty-four hours, and went off by taking oil, laudanum, &c. without the advice or assistance of a physician.

“The train of symptoms, under which I found her suffering, commenced on the 16th instant. She had been stooping down, washing the floor of the house, and on raising up, was suddenly seized with a very violent pain across the lower part of the abdomen. The rectum was almost immediately evacuated, and vomiting soon supervened. To allay the vomiting and relieve the pain, a variety of medicines, such as oil, salts, laudanum, &c. were administered; but without effect. Being in indigent circumstances, she was deterred from employing a

physician till the 20th instant, when I, as one of the physicians of the Northern Dispensary, was desired to visit her.

“On being permitted to examine the parts, I found a femoral hernia about the size of a hen’s egg. After placing the patient in a proper position, I resorted to the taxis, and in a few minutes, had the pleasure of feeling the tumour give way, and a gurgling noise, produced by the return of the intestine, was distinctly heard.

“The peculiar and distressing pain attending a strangulated bowel ceased; and as the omentum had been so long excluded from the cavity of the abdomen, I deemed it imprudent to prolong the efforts to restore it. I accordingly directed a small dose of calomel and jalap, and left the patient, with instructions that she should be kept as quiet as possible.

“In the evening, I found her with slight fever, but entirely free from the intense pain which she had previously complained of. The vomiting had ceased, but her bowels had not been evacuated. I directed a set of Seidlitz powders to be taken in divided doses at intervals of half an hour, and a large cathartic injection to be administered immediately, and repeated in an hour if it did not produce the desired effect.

“The next morning the nurse reported that the injection produced a copious discharge from the bowels, and that the patient had passed a very comfortable night.

“On the succeeding morning the nurse called my attention to an extensive and painful inflammation directly over the hernial tumour. As I was conscious that no-rude efforts had been made to return the omentum, I was at first somewhat surprised; but on exam-

ining the parts, I could readily perceive, by the peculiar crepitation, that there was a gaseous fluid contained in the cellular texture beneath; and feeling satisfied that it was derived from no other source than the protruded omentum that still remained strangulated, I directed that a poultice should be applied to the part, and placed the woman in such a position as to relax the integuments as much as possible.

“The application of the poultice was, in a short time, followed by the discharge of a yellow and extremely offensive matter; several pieces of dead omentum afterwards passed out, and the inflammation of the surrounding parts subsided. Some difficulty was experienced in healing the sinus which remained, but it was effected by the introduction of lint dipped in tincture of myrrh.

“This woman has remained ever since entirely free from rupture, and enjoys excellent health, though she continues to work very hard.”

INFLAMED OMENTUM.

A portion of bowel and omentum may suddenly descend in the same sac, and immediately become strangulated. Efforts at reduction failing, an operation is resorted to; the contents of the sac are found in a state of high and recent inflammation, and the only course that presents itself is, to return the parts into the abdomen. In doing this, the patient is subjected to great risk, either from the subsequent mortification of the omental mass, or from the occurrence of severe and fatal peritoneal inflammation. Some years ago the following case occurred to me, in which I was obliged to incur these risks.

CASE XXX.

Entero-Epiplocele—Omentum Inflamed—Return into Cavity—Death.

5th mo. 11th, 1820. I was called in haste to Bustleton, in consultation with Drs. Worthington and Smith, to visit a young man residing at the stage-house. I learned that on the morning of the 10th instant, at about 10 o'clock, the bowel had descended, for the first time in his life, in consequence of violent exertion, and had immediately become strangulated. The taxis and other means of reduction had been faithfully tried by Dr. Worthington, but without success.

As the symptoms were urgent, I proposed the immediate resort to an operation, to which the patient assented. Pulv. opii. gr. ij. were exhibited, the parts were shaved, and he was placed upon the table. I proceeded to the operation, assisted by his physicians and one of my pupils.

An incision was commenced above the ring, and carried down to the lower part of the scrotum; the dissection was cautiously pursued until the most prominent part of the sac was exposed. The sac contained a small portion of fluid, and was opened without difficulty. When the opening was sufficiently enlarged to allow my finger to pass, my first impression was that the sac contained coagulated blood; but on closer examination, I found that a large mass of omentum was closely impacted in a very small space, and the whole of its exterior surface was studded with small points of coagu-

lated blood, which were so close to each other as to convey the impression of the whole mass being blood, as I had first supposed.

On examining the omentum, I was at first inclined to the opinion that it was mortified, owing to its *very dark colour*; but on puncturing a vein on its surface, blood escaped, which induced me to suppose that it was not. To ascertain the fact more certainly, we adopted the plan of covering the parts with a bladder filled with warm water, as in case xv. p. 95.

The bladder was kept applied for about twenty minutes, when it was perfectly evident that the circulation was going on, and that the omentum was highly inflamed. A small portion of intestine was strangulated; its colour was very dark, but we did not consider it in a state of gangrene. After dividing the stricture, the bowel was readily returned. But the disposal of the omentum was now to be considered; this part had certainly suffered great contusion from some cause or other. I was inclined to believe that the efforts at taxis might have caused the effusion of blood upon the surface of the omental ball—on the same principle that water is pressed from a sponge, when it is forcibly grasped in the hand.

To cut off this mass in its vascular and inflamed condition, would subject the patient to very great hazard from hemorrhage, after its return into the abdomen, unless ligatures had been applied to arrest it; while the ligatures would, in my judgment, more certainly induce fatal peritonitis, than the return of the inflamed mass. Besides, it was not probable that the excision of that portion which presented externally, would prevent the extension of inflammation to the

parts within. To allow a living inflamed mass to remain in the wound, as in a case of mortified omentum, appeared very objectionable.

It was therefore concluded, that its return into the abdominal cavity, although manifestly attended with great danger, would subject the patient to less risk than any other method. To effect this, the opening at the ring was enlarged, and the part readily restored. The wound was not drawn together as usual, by strips and sutures, but dressed very lightly with simple cerate.

I left the case under the full conviction that dangerous inflammation would ensue; and advised my medical friends to allow the patient to rest for a few hours, to recover from the fatigue of the operation; and if reaction occurred, to pursue a rigid antiphlogistic course. It was agreed to keep the bowels open with castor oil, and to restrict his diet to barley-water.

I received regular accounts from Dr. Smith of the progress of the case.

Soon after the operation, he became delirious and feverish, symptoms of peritonitis, followed by singultus, supervened, and he died on the evening of the 21st inst., ten days after the operation.

Dissection.

On opening the abdomen and pelvis, the commencement of the colon presented a very dark appearance for the space of about six inches, and at one point it was quite black. The coats of the bowel were abraded in several places, and at several spots small sloughs had separated, so that flatus rushed out on handling the surrounding bowel. The other parts of the bowels appeared nearly natural.

That portion of omentum which had been returned, was still inflamed, and adhered in a solid mass to the surrounding parts. No appearance of gangrene was discovered in any part of the omentum, though the parts around the returned portion were slightly inflamed.

The pelvis contained about a pint of turbid fluid, resembling pus diluted with water, and slightly tinged with blood. No unpleasant odour was observed in any part of the examination.

CHAPTER VII.

CONCEALED HERNIA.

EVERY candid practitioner, who has had much experience in the treatment of hernia, will admit that cases of a very dangerous character, are sometimes involved in great obscurity, and may elude his vigilance.

Hence the utmost caution is required to detect those concealed cases, which, under the common form of colic, may continue unsuspected, until the death of the patient, followed by a post mortem examination, reveals the true state of the case.

Having had a share of painful experience in this form of the disease, I have been led to increased minuteness in my examinations, and have been enabled to afford relief by an operation, in several cases, which would probably have escaped detection, had I not been particularly watchful.

The most common seat of mischief, in these cases, is at the internal ring. The principal part of a protruded intestine may be returned by taxis, and yet a very small portion may be detained at the internal ring, forming a very slight prominence or fulness at this point, scarcely observable, and yet sufficient to keep up fatal strangulation. A very curious case is related by Dr. Dorsey, in which an old hernial sac formed the seat of stricture. A small process of sac, which had been reduced, and was almost within the abdomen, extended through

the upper ring; into this a portion of the ileum had been forced, and became strangulated. In this case an operation was performed, but the patient died a few hours afterwards; and on a post mortem examination, the strangulated intestine was found mortified.*

In the case to be detailed in this section, which I saw in consultation with my departed friend Dr. Perkin, it would really appear, from his account of the dissection, as if the strictured bowel had been, from some cause or other, deprived of its contents, whereby its internal surfaces were brought into contact, and the prominence of the tumour thus destroyed. There is an obscurity about this case, which I cannot comprehend, and which I must leave the reader to explain for himself. There can be no doubt that the patient died with the symptoms of strangulated hernia.

CASE XXXI.

Concealed Hernia—Strictured Bowel Flaccid—Died.

9th mo. 1818. I was lately called in consultation with Dr. Perkin, to visit J. E., a middle-aged man, corder at Race street wharf. I was informed, that four days previous to my visit, he had been seized with constipation of the bowels, pain, and vomiting. All efforts to relieve him had utterly failed. My first question was, has he been afflicted with rupture? The Doctor said he had examined the groins, but could discover nothing—though the patient had been the subject of hernia.

* Dorsey's Surgery, vol. ii. p. 49.

I now made a very careful examination, and could find no tumour. The patient himself believed that his rupture had no concern in his symptoms.

We met again in a few hours; and found that the patient had been sinking rapidly. At our next visit, a few hours after, he had a cold, clammy sweat, with a feeble pulse; tense and tumid abdomen; an absence of pain. His stomach now retained every thing that was given.

I again examined for hernia, being convinced that the symptoms strongly indicated it; but I was satisfied that nothing had passed the abdominal ring. I then remarked to Dr. Perkin, that perhaps strangulation might exist at the internal ring; but as there was no tumefaction to guide us to the part, we did not consider it justifiable to cut down into the abdomen, merely upon conjecture. A few hours after this visit, the poor man died.

Dissection.

Dr. Perkin dissected the body, and informed me, that he found a hernial sac below the ring, but it did not descend low in the scrotum. About five inches of intestine was found in the sac in a state of strangulation; it was of a very dark colour, but not actually mortified. The bowels above the stricture were enormously distended with flatus, but the portion within the sac was flaccid, and its sides were in contact.

CASE XXXII.

Strangulated Inguinal Hernia—Apparent Reduction by Taxis—Death.

9th mo. 20th, 1818. A poor woman was brought into the Hospital in the evening, labouring under the symptoms of strangulated hernia. The hernia was inguinal, in the left side, and had been strangulated for two days. The tumour was not large; the abdomen rather tumid and tender on pressure; tongue nearly natural; pulse pretty good. She had been attended previous to her admission by a very respectable physician, who, from her account, had made various efforts to reduce the parts. Among other plans, a tobacco enema had been used, which made her very sick, and procured some evacuation.

I directed two grains of opium, and had preparations made for an operation. Drs. Hartshorne and Dorsey met me in about two hours. On inquiry, it was found that a portion of the rupture generally remained in the sac, and the patient thought that a part had been reduced by her physician out of the house.

Dr. Klapp, who had attended her, was sent for, but was not at home. As it was late in the evening, and the symptoms were not so urgent as in many cases, my colleagues proposed delaying the operation until morning. It was agreed to put the patient in a warm bath, and to apply gradual pressure by a succession of smoothing irons, allowed to remain on the part, and changed as fast as they became warm.

Next morning, 21st. We found that the tumour had disappeared. It had been reduced by Dr. B. H. Coates, the house surgeon, early in the morning. Dr. C. has kindly assisted me in making out a report of the case, and states his recollections on this point, in the following terms:

“The smoothing irons were continued on the part all night, as the woman informed me; and at my visit next morning, which must have been about 7 o’clock, I found to my extreme gratification, though, as it subsequently proved, in vain, that I could apparently reduce the tumour. It passed up, along the abdominal canal, without any resistance; and I observed an absence of the usual rounded form and elastic resiliency of intestinal hernias; and, finally, that it appeared not completely to enter the abdomen, a slight fulness remaining at the upper part of the abdominal canal, extending downwards from the region of the internal ring. From these circumstances I inferred the tumour to be omental; and judged that there remained no stricture.”

22d. Found the patient labouring under the symptoms of strangulated hernia, and evidently sinking. On examining the groin, the rupture appeared to be reduced. I desired one of the house pupils to call on one or both of my colleagues, and request them to see the case, and if they believed that any thing could be done for the relief of the patient, to call a consultation.

She was seen by Dr. Hartshorne, who agreed with me, that nothing further could be done. The poor woman died early on the morning of the 24th.

A post mortem examination was made by Dr. Coates. I was not present, but have received from Dr. C. the following account of the dissection.

“A crucial incision was made. As I raised that angle of the abdominal parietes which contained the part affected, I saw the fold of intestine falling out of the internal ring, by its own weight and continuity, notwithstanding I made a sudden effort to prevent it.

“It was thus evident that there was no strangulation at the time. There was an indentation round the fold of intestine, which embraced its whole width. I afterwards applied a thong of buckskin leather loosely around the place of constriction, in such a manner as to maintain the original form of the intestine, and preserved the fold, distended and thus secured, in spirits, together with the separated sac. I have seen this preparation within the last two or three years, although I have either lost it in removing, or given it away.

“I remember examining the patient very carefully for peritoneal inflammation. The peritoneal surface was perfectly healthy. There was no adhesion or effusion of any kind, either in the cavity of the abdomen, or in the sac; nor the least coagulating lymph adhering to the included fold, to the stricture, or to the lining of the sac. The intestine was not reddened, except a little irregular, dark, mottled appearance, which I took to be settling of blood. There was not any large collection of feces above the point included in the stricture; so that I gained the impression that the passage of the contents of the intestine was not obstructed.”

These two cases made a very strong impression on my mind, and induced me to believe that an incarcerated bowel might escape detection, unless the examination was very carefully conducted. In the case of J.E., Dr. Perkin and myself both examined with more than ordi-

nary care, and could discover nothing. And in the case of the woman at the Hospital, knowing that there had been a tumour, and finding it had disappeared, it was a fair inference that the hernia was reduced. The result of these cases were to me a source of great uneasiness; and I determined, if another obscure case presented itself, to watch it very narrowly.

Not a great while after this, such an opportunity was afforded; and I attribute the successful issue of the case, in a great measure, to my previous experience.

CASE XXXIII.

Strangulated Inguinal Hernia—Stricture at Internal ring—Small tumour externally—Strangulated eight days—Recovered.

In the early part of the summer of 1819, my friend Dr. E. A. Atlee sent one of his students to me to borrow a syringe. The student stated that he wished to give an injection to a patient whose bowels were obstinately constipated. From his account I was impressed with an idea, that it was a case of hernia, and requested him to state to Dr. Atlee my apprehensions, and to desire him to make an examination of the groins. The student delivered my message, and not long afterward, I received the following history of the case from Dr. Atlee. On the 30th of 5th mo. the patient was attacked with symptoms of severe colic. The usual remedies were resorted to without affording relief. On the 31st the Doctor suspected hernia, asked the patient

if there was any swelling in the groin, and was answered in the negative.

The constipation was obstinate, the stomach rejected almost every thing, and he complained of acute pain over the abdomen, with tenderness on pressure.

Blisters were applied to the abdomen, wrists, and ankles, and cathartics and enemata were freely given, without procuring stools. These symptoms continued until 6th mo. 6th,—*eight days* from the commencement of the attack,—when the true state of the case was discovered. On the receipt of my message, Dr. A. made a minute examination of the groins, and thought he discovered something suspicious. The prominence was so slight that it could not be detected by the eye, and what is remarkable, it had eluded observation, though the patient was examined while naked, and lying in a warm bath. The Doctor now thought he could discover a small tumour above the external abdominal ring. At this stage of the case I was requested to see the patient in consultation. On a minute examination I could feel a small tumour at the internal ring. Dr. Hewson was sent for, and met us very soon. On examination he could feel a tumour, and agreed with us, that the operation should be immediately performed. I made an incision directly over the tumour, and exposed the tendon of the external oblique muscle. This was divided by the director and bistoury, until the hernial sac was brought into view; this was opened, and a portion of intestine was discovered, of a very dark colour, but not mortified. The stricture was not very firm, or I presume mortification would have occurred much sooner. I divided the stricture and returned the bowel. The sides of the wound were now

approximated by the interrupted suture, and secured by adhesive strips, and the dressing completed by a compress and bandage.—12, P. M. Pulse 85 in the minute, full and tense; considerable heat in the head, throbbing of temporal artery, and delirium. Blood was taken from the arm, which afforded immediate relief.

7th. *Noon*. Pulse 75; is easy, and inclined to sleep; thirst abated. Complains of occasional jumping pain in the wound. Affection of the head entirely ceased.—*Evening*. Has taken about \bar{z} iv. of ol. ricini; bowels not yet opened; stomach settled; abdomen not distended or painful; pulse 80. Had an injection late in the evening.

8th. *Morning*. Pulse about 80; has had no evacuation since injection.—*Evening*. Has had two or three plentiful evacuations of fecal matter; somewhat delirious; pulse full and strong, 82 in the minute; abdomen flaccid.

9th. Passed a restless night, with considerable delirium. Took \bar{z} j. of Glauber salts, with an opiate during the night. This morning another dose of salts was given which produced two free evacuations. The head was shaved, and cold water repeatedly applied; the body was sponged with cold water. Rennet whey was prescribed for drink. Another ounce of salts was given at noon.—*Evening*. Has had three small evacuations; the abdomen is free from pain. Has had throbbing of the carotids, with some aberration of mind through the day. Another dose of salts was prescribed. A wineglassful of a strong infusion of hops was prescribed every two hours. 11, P. M. Patient somewhat comatose, with throbbing of the carotids. Apply ice to the head.

10th. *Morning*. Has had a recurrence of the affection of the head. Cups were applied, and afforded relief. Patient is now pretty free from delirium, and is inclined to doze. Tongue is heavily loaded.—10, P. M. Pulse was bounding, about 75. Has had a bilious evacuation, and is free from delirium.

11th. *Morning*. Patient considerably improved; pulse nearly natural; bowels opened several times during the day.

12th. Has had a good night. The wound has a healthy appearance, except a slough in the centre.

From this time the patient rapidly recovered.

CASE XXXIV.

Strangulated Scrotal Hernia—Apparent Reduction—Recovered.

11th mo. 25th, 1821. I was called this day in consultation with Dr. Knight, to visit J. S., a young man about twenty-eight or thirty years of age. He had lately recovered from a three months illness on the river Susquehanna, with the epidemic autumnal fever. He has been afflicted with hernia for many years; it has been several times strangulated, but he has always been able to reduce it.

The present attack commenced on the evening of the 23d instant. When Dr. Knight was called, he found a strangulated scrotal hernia of considerable size on the right side. The patient was in great pain. He tried the taxis, bled him, and gave him a dose of opium. On

the succeeding day he directed a cathartic, ice to the tumour, &c. The result was that the hernia appeared to be reduced, and the Doctor anticipated no danger. The patient stated that there was always more fulness on that side than on the other. The Doctor was prevented by a case of midwifery, from seeing him again until morning; when he was alarmed at finding the patient's bowels still constipated, and that he had stercoraceous vomiting and singultus. In consequence of this state of things my attendance in consultation was desired.

On examination I readily distinguished the spermatic cord. There was rather a preternatural fulness in the course of the abdominal ring, and some tenderness on pressure, particularly about the internal ring. But as the statement of the patient showed that there was always some fulness of this part, the surgeon might easily have been deceived into the belief that the hernia had been reduced, had it not been for the presence of marked evidences of strangulation. We recommended the immediate removal of the patient to the Hospital. He requested two hours to consider of it. At the conclusion of that time, three grains of opium were given, and he was removed in a carriage. Just before the operation, thirty drops of laudanum were exhibited, and I proceeded, Drs. Hartshorne and Price being present in consultation.

I made a free incision through the integuments, beginning above the internal ring and extending down on the scrotum. I dissected down until the tendon of the external oblique muscle was exposed. In doing this, an artery had to be secured. Aided by the director and bistoury, I now divided the parts, from above down-

ward, and soon laid bare a hernial sac, distended with a little fluid. I opened it in the usual manner, and exposed the testicle. The hernia was congenital. We now discovered a piece of intestine just peeping at the mouth of the external ring. Its colour was good. I divided the parts slightly, and could pass my finger freely round the bowel, but found that it would not return. I now pushed my finger along the course of the canal till I came to the internal ring; there I distinctly felt the stricture, and divided it directly upward with Cooper's blunt bistoury, (my own not being at hand,) and reduced the intestine with great ease. We then brought the lips of the wound together with adhesive plaster, and two stitches on the scrotum, and the patient was put to bed. We directed his knees to be bent and supported; gave him a little wine and water; and ordered him thirty drops of laudanum every six hours, and barley-water for nourishment.

26th. The patient has passed a good night. The singultus and vomiting have ceased. He appears now quite comfortable, but he has complained of great thirst through the night. His abdomen is very tumid, and tympanitic; his pulse 112; and his tongue furred. Ordered castor oil, a table-spoonful every two hours.—*Evening*. The oil has not operated, but the patient has passed flatus. Directed the oil to be continued. The abdomen is still very tympanitic, though somewhat less tumid.

27th. The patient has had free evacuations from his bowels after having taken eight doses of the oil. He is evidently better; has less thirst; stomach settled; no singultus; his tongue is still furred, and rather dark. The tympanitis has subsided. Pulse 90 in the *morning*; 96

in the *evening*. Directed to continue the barley-water; to use molasses and water, or plain water for drink; and if restless, an opiate.

28th. The patient is evidently improving. He has had an evacuation from his bowels, and the tympanitis has subsided. Pulse 84; tongue still furred and rather dark. Directed a diet of rye mush and molasses, or oatmeal gruel.

29th. *Morning*. The patient is still improving. His tongue is disposed to become clean. Directed ol. ricini $\frac{z}{ss}$. every two hours until the bowels are moved.—*Evening*. Three doses of the oil have produced two stools, and the tongue is becoming clean. Pulse 84. The patient is in fine spirits.

This patient recovered and was discharged cured.

CHAPTER VIII.

UMBILICAL HERNIA.

My experience in strangulated umbilical hernia may be considered as limited. I have, however, witnessed a few cases which may be worthy of record.

A very interesting case of this form of the disease came under my notice in consultation with Drs. Dorsey and Cathrall, while I was surgeon to the Almshouse hospital. The strangulation of the bowel was caused by a number of bands passing across the umbilical opening in various directions. These occasioned considerable difficulty in the operation—the patient died. Dr. Dorsey performed the operation, and thus notices the case in his work on surgery:

“In one case of umbilical hernia, I was greatly embarrassed by finding the intestine strangulated in several different places by bands passing from the omentum to the intestine. These bands, which were elongated adhesions of a very firm texture, converted the hernial sac into a cavity resembling the ventricles of the heart; the morbid productions extending, like the chordæ tendinæ, from one part of the cavity to another; under several of these cords, portions of the ileum had been strangulated, and by cautious dissection, I succeeded in liberating, and returning into the abdomen, the recently protruded parts.”

A case of umbilical rupture of a peculiar character came under my care in the spring of 1817, which I will relate from my notes.

CASE XXXV.

Umbilical Hernia—Mortification of the Integuments—Death.

3d mo. 8th, 1817. Dr. Hollingshead, of Moorestown, New Jersey, came over to see me, and requested my immediate attendance on one of his patients in Evesham. We crossed the Delaware with considerable difficulty on account of the ice, and arrived at the house just before night.

The patient was a farmer's wife, of middle age, subject to umbilical hernia for about twenty years, but was always able to reduce it until the morning of the 5th instant, when it became strangulated. I found the integuments covering the tumour perfectly livid, and in a state of mortification; this foreclosed all reasonable prospect of success from an operation.

At the request of the Doctor I communicated to the patient a candid statement of her awful situation. The extremely slender prospect of success from an operation was fairly presented to her. It could not, therefore, be encouraged, and yet if desired, this last effort should not be refused. As she appeared to have considerable strength, and with her husband decided in favour of the operation, it was performed. An incision was carefully made through the skin; no bleeding fol-

lowed, and the part appeared as entirely insensible to pain as a piece of black leather. I divided the stricture with a blunt-pointed bistoury. The hernial sac contained a portion of omentum and small intestine in a state of complete mortification.

There was a hardness in the integuments round the margin of the hernia for several inches, like a cake of placenta, caused it is supposed by inflammation.

The adhesions were so firm, that I could not draw out into view any portion of living bowel. Little else remained after liberating the parts, than to rest the case upon the efforts of nature; but all was unavailing, she died on the morning of the tenth instant.

I once attended an old black woman in Middle alley, a Dispensary patient, who had a large umbilical rupture in a state of strangulation, with gangrene of the integuments. In this case no operation was attempted, and the patient died.

A most extraordinary case of this disease fell under my observation some years ago, in company with my friend Dr. Hartshorne.

The patient was a female who was attended by the late Dr. Cleaver, who called upon us to assist him in the operation; the hernia was small. A stricture was divided, and a portion of bowel returned. The case went on very favourably for several days, when most unexpectedly the patient was attacked with tetanus, and soon died.

I have not ascertained that Dr. C. left any note of the case, but so far as my recollection of the circumstances may be relied on, the facts were these. On examination after death, a small portion of intestine was

found in a mortified state, without the usual evidences of adhesion from previous inflammation. The impression left on my mind is, that owing to some peculiar condition of the constitution of this patient, the usual order of nature was interrupted, and the dead bowel instead of producing surrounding inflammation, had acted as an irritant to the nervous system, causing tetanic spasm, and death.

Dr. Hartshorne informs me, that he has a distinct recollection of the case, and of its termination in tetanus, and states, that he once operated on a woman at the Pennsylvania Hospital, for strangulated umbilical hernia, who was strongly threatened with tetanus, but who finally recovered.

The occurrence of umbilical rupture in early infancy is not uncommon, but I believe it will be found that in a large proportion of these cases, nature performs a radical cure, and thus renders it unnecessary for the surgeon to interfere. This opinion is confirmed by the experience of Dr. Physick. In a late conversation with him, he stated to my son, that in the whole course of his practice, he had seldom experienced any trouble in the treatment of these cases, and had never considered it necessary to perform any operation for their cure. It is only requisite in ordinary cases, to direct the mother or nurse to place the hand over the tumour, when the child cries, and to keep the bowels open. If these directions are not effectual in retaining the bowel, the application of a graduated compress, secured by strips of sticking plaster, will be found useful.

Déssault has recommended a plan for the radical cure of umbilical hernia, which he has frequently performed, and considers quite safe. I pursued this plan

many years ago, in a case in which I was concerned with Drs. Wistar and Physick. The case resulted favourably, though not without considerable anxiety on our part. It is detailed in this place, not with a view of recommending the operation, but to show that it is not, in every instance, so trifling an affair as one might be led to conclude.

With my present experience, I would not repeat the operation in a similar case, but would prefer relying on the efforts of nature, with an observance of the directions just noticed.

CASE XXXVI.

Umbilical Hernia—Radical Cure.

10th mo. 31st, 1810. S. A., aged about twenty-two months, has had an umbilical hernia from his birth. This day, in consultation with Drs. Wistar and Physick, I commenced an attempt to produce a radical cure according to the plan of Dessault. Dr. Wistar took the tumour between his fingers, having first returned the contents of the sac. I now passed a ligature three times round the base of the integuments and the sac, and secured it at each turn by a double knot. The ligature was only drawn tight enough to give an inconsiderable degree of pain; the child did not cry.

11th mo. 1st. The child has not appeared to sustain any inconvenience. His bowels are rather lax. He is kept on a soft vegetable diet, especially rye mush. The tumour looks a little faded in colour, and rather

shrunk. It now appears as if the parts were disposed to form another sac behind the one which has been inclosed in the ligature; but as pressure on this protruded part does not cause it to return, there is reason to believe that it is occasioned by the cellular membrane being a little inflamed and thickened.

2d. The patient is still free from pain and uneasiness. On inquiry, it appears that he rubbed off the ligature this morning: an inflamed ring marks the place where it was applied, and the integuments containing the sac are certainly a little thickened. While fixing him for the purpose of applying the ligature again, he became restless and cried; but it really appears as if the protrusion of the bowel is not so great as before the first application.

The integuments were now taken hold of by Dr. Wistar, as before, and I passed the ligature rather below the place where the previous one had been applied, and secured it by three turns, with a double knot on each turn, drawing it considerably tighter than before. This ligature gave rather more pain than the first, but not a great deal.

3d. The ligature retains its situation very well. The lower part of the tumour appears of a purplish hue. The tumour itself is rather tense. The patient does not appear to sustain any material inconvenience; he plays about, and is very lively.

4th. The tumour seemed a little shrunk, and it was concluded to pass a ligature sufficiently tight to intercept the circulation. This was accordingly done, without removing the other ligature. It gave considerable momentary pain, but it appeared soon over.

5th. The tumour looks black. A vesication filled

with bloody-coloured serum has been formed near its base.

8th. The ligature retains its situation. The vesicated part has dried completely, and the whole surface of the tumour is of a light-purplish colour. It appears to be rather hard. On puncturing it with a lancet, it did not bleed, but the tumour has not shrunk.

11th. The exterior covering of the tumour appears to have sloughed away, leaving a living surface beneath, from which some pus escapes; and pus is also formed about the ligature. Some slight inflammation is apparent in the skin near the tumour; for this I directed a poultice containing some lead-water.*

15th. *Morning*. The poultice has been continued until this day. The ligature has gradually cut through the greater part of the integuments, leaving the sac nearly bare, and a considerable cavity in the integuments. *This has not a pleasant appearance*. I now passed the last ligature round the tumour, and drew it quite tight. On visiting him in the *afternoon*, for the purpose of applying adhesive strips, so as to give as much support as possible to the parts, I found that the integuments had gradually contracted since the poultice had been removed, and I believe that the poultice was certainly the cause of the parts looking so relaxed, and the ulcer so large, as they did in the morning. The child still enjoys fine health and spirits.

* About the time of the application of the poultice, the extent of the ulcerated surface caused me considerable uneasiness; had the child been attacked with severe cough, or long-continued crying, there would, I believe, have been some risk of a rupture of the new-formed parts, and consequent protrusion of the bowels.

16th. The ligature and tumour came off this morning, leaving a small aperture and granulations over its surface. A piece of adhesive plaster was applied over the part, compresses placed on it, and a bandage carried over the whole, to complete the dressing.

Cicatrization took place very soon, and the cure has proved complete.

CHAPTER IX.

STRANGULATION WITHIN THE ABDOMEN.

THE symptoms which mark a violent attack of strangulated hernia may exist, without a protrusion at any point. The obscurity of these cases baffles all efforts at relief, and the physician is obliged to look on, and witness a fatal termination.

Several cases of this description have fallen under my observation; in two of these a post mortem examination was permitted, and the cause satisfactorily ascertained. In another instance, which occurred some years ago, the event was equally distressing, though the cause of the symptoms remains a mystery. The patient was a remarkably fine-looking young man from Kentucky, tall, yet very muscular and strong. He had come to the city to purchase a stock of goods, and was suddenly seized, in a state of high health, with the symptoms of strangulated hernia. Dr. Physick was called to visit him, suspected hernia, and made a minute examination, but could discover no protrusion.

He requested me to see the patient in consultation; the examination was carefully repeated by both of us, but we could discover nothing to justify an operation. He died on the fifth day from his attack. To our great regret we were not permitted to make a post mortem examination; though from the symptoms there

can scarcely be a doubt, that his death was caused by some mechanical obstruction in the bowels.

In the two cases in which a post mortem examination took place, it will be perceived, that the accumulation of flatus in the bowels had the principal agency in keeping up the obstruction.

This fact I consider important, as pointing to the only method of treatment which seems to offer any prospect of relief under such circumstances.

If a cord of omentum, thrown across the abdomen, be pressed by the distended bowel to its utmost point of tension, it is evident that, as the accumulation of flatus increases, the sides of the bowel will be opposed by this tightened cord, and its internal surfaces be brought into contact. The greater the distension, the more firmly will the bowel be secured, and the more complete will be the obstruction. The only way in which parts thus strangulated can be relieved, is by withdrawing the flatus from the bowels, and thus restoring their freedom of motion. In another case, I should attempt to effect this by the gum-elastic tube, and exhausting syringe, employed as recommended in the remarks which follow case xxxviii., at the close of this chapter.

CASE XXXVII.

Constipation—Obstruction produced by Diseased Omentum—Death.

1st mo. 3d, 1831. M.B., aged about forty-eight years, a large, corpulent woman, the mother of twelve children,

was suddenly attacked in the market, on the morning of the 1st instant, with violent abdominal pain, sickness of stomach, and vomiting.

Dr. Beasley saw her soon after the attack. She informed him that her bowels had been constipated for two days, and that she had taken nothing that morning to which she could refer the attack; her breakfast had been light and simple. The Doctor endeavoured to allay the violent pain by opiates, and administered calomel, infus. senna, and ol. ricini, to act upon the bowels. She had been twice bled, and was placed in a warm bath.

On the evening of the 2d, I was called in consultation. All attempts to act upon the bowels had failed, though the stomach was more settled. From the history of the case I immediately suspected strangulated hernia, but on a careful examination no tumour could be discovered. I encouraged Dr. Beasley to persist in the use of castor oil, and advised anodyne enemata to calm the restlessness of the patient. There was at this time considerable tenderness on pressure over the abdomen, extending around the umbilicus, and from the left, toward the right side. Her pulse was feeble, and the skin cool. Before daylight, on the morning of the 3d, she died.

Dissection.

Dr. Beasley made a post mortem examination, at which I was present. A portion of the omentum was formed into a rope or cord, which extended from the left to the right side, dipped down into the pelvis, and was firmly attached to the peritoneum across the symphysis pubis. Involved in this cord we found the left

ovarium with an hydatid attached to it. The bowels were monstrously distended with flatus. The cord of omentum drawn thus firmly across the abdomen, acted like a ligature upon the distended intestines, and the portions which came within its range, were pressed together, thus forming a complete obstruction in the passage; and the greater the distension, the firmer was the pressure of the cord.

We suspected that this state of things must have been caused by a previous attack of peritoneal inflammation, probably depending on puerperal fever. On inquiry of the husband we ascertained, that a few days after the birth of one of her children, ten years ago, she was attacked with violent fever, and pain in the abdomen, which confined her for a long time. Since this time she had been subject to occasional attacks of disease in the abdomen. The ovarium contained a considerable quantity of hair of a whitish appearance.

CASE XXXVIII.

Strangulated Scrotal Hernia—Stricture divided—Obstruction continued from adhesions within the abdomen, and distension of bowels.

During my pupilage with Dr. Wistar, a highly interesting case of strangulated hernia occurred in his practice. The following is the history of the case:

James —, an apprentice to J. S., aged about sixteen years, had been for several years the subject of a

scrotal hernia. As he was able to return the bowel without difficulty, he never made it known to his master, and had not worn a truss. On the evening of the 3d instant, he was unable to return the bowel as usual, and on the following morning Dr. Griffiths saw him: he directed v. s., warm bath, purgative injections, &c., and endeavoured to reduce the tumour by taxis. In the evening he was bled again, and the other remedies were continued. Several days elapsed, during which time Dr. Currie was called in consultation; the usual means were tried without effect; and on the evening of the 9th, Dr. Wistar was called, and with the aid of Dr. Physick, proceeded to the operation late at night.

The protruding bowel, together with a portion of omentum, were found in a state of sphacelation. The stricture was divided. Two orifices were formed in the intestine, through the upper of which a flexible tube was passed, and several injections administered, but with little effect; for although the patient passed a small portion of feces from the artificial orifice and the rectum, yet the vomiting still continued.

The patient slept about an hour after the operation, and passed the next day without appearing to suffer much. About 9 o'clock in the *evening* he became restless, and vomited several times, complained of violent pain, which commenced about the umbilicus, and extended across towards the right hypochondriac region. Warm fomentations were applied to the abdomen, and he took warm mint-tea, by which the pain and vomiting were relieved. Two injections were thrown into the artificial anus, a poultice was applied to the wound, and the patient was left under my care for the night.

He was exceedingly restless through the night, and vomited stercoraceous matter very copiously. Opium was exhibited, both in the liquid and solid form, but was immediately rejected by the stomach. He dozed at short intervals, but had no refreshing sleep; the extremities were cold, and his strength nearly exhausted; warm bricks were applied to the feet. In the morning he was slightly relieved; took, in the course of the day and the next night, wine-whey, wine, &c. On the afternoon of the 13th he became delirious, his countenance exhibited marks of extreme prostration, and about five o'clock on the morning of the 14th, he died.

Dissection.

Having obtained permission to open the body, (Dr. Wistar being absent,) I proceeded to the examination under the direction of Drs. Physick, Griffiths, and Currie. Upon opening the abdomen, the small intestines were found amazingly distended with flatus and feces; the omentum was remarkably free from adipose substance, and was closely adhering to the intestines in the vicinity of the stricture. The ends of the protruded portion of bowel were firmly agglutinated to the external wound, and the intestines above the stricture were adherent to each other, and in a state nearly approaching to mortification. The part which had been strangulated, was a portion of the ileum, which commenced about twenty-seven inches from its termination in the cœcum. The intestine leading from the stricture toward the duodenum was very much distended, except a portion which was attached to the ring, and extended in an oblique direction across the pelvis, presenting an ap-

pearance, which was aptly compared by Dr. Physick, to one of the ureters entering the bladder.

This portion being fixed to the strictured part, was pressed upon by the mass of distended bowel from above, while on its lower surface it was antagonized by the large muscles lining the pelvis, and thus its sides were firmly pressed together, and the calibre of the intestine obliterated, for the distance of several inches. The bowels above being distended beyond the point of reaction, the obstruction was maintained, and must have continued until some means could have been adopted to induce peristaltic action, and thus cause an expulsion of their contents.

The colon and rectum were empty, and very much contracted; the stomach contained a large portion of fluid, and dark stercoraceous matter.

Remarks.

In looking over this case which occurred many years ago, some views, suggested by subsequent experience, may be worthy of consideration in this place.

That the intestines may be so distended with flatus as to suspend peristaltic action, is proved by ample experience. Thus in the latter stage of some of our fevers the tympanitic abdomen occurs, as one of the most alarming symptoms. I have known this state of things to occur during the existence of a diarrhœa, and have observed that the bowels were not only incapable of discharging flatus, but that the *diarrhœa* was entirely suspended.

In some violent cases of colic, accompanied with constipation and great distension of the bowels, it is well known that active medicines administered by the mouth,

and enemata thrown into the rectum, sometimes fail in producing the desired effect, and relief is finally obtained by the introduction of a flexible tube into the colon, through which flatus is extracted by an exhausting syringe.

A remarkable instance of this kind occurred to me several years ago. I was called in consultation with a young practitioner, in a case of extreme danger, attended with obstinate constipation and enormous distension of the belly. A variety of medicines had been tried without any beneficial effect. I explained the views here presented, to the physician in attendance; he most industriously employed the means suggested, and while engaged in the operation with the tube and syringe, the bowels began to act for themselves, and flatus and feces were expelled in abundance, to the great relief of the patient, who finally recovered.

CHAPTER X.

ANOMALOUS CASES.

THE following cases do not fall under any of the general heads of the subject of hernia, but as they are not without some interest, I have placed them together in this chapter, which may be considered as a kind of appendix to those already given.

CASE XXXIX.

Hernia—Sudden Death from Strangulation.

2d mo., 1822. Anthony, an old Italian sailor at the Hospital, who was just recovering from a severe contusion of the spine, was attacked with strangulated hernia. I was passing through the ward about half an hour after it occurred, and was told by one of the patients that Anthony had the colic. I inquired if he had rupture, and ascertained the fact. It was an enormously large hernia, and from that circumstance I expected it would be more readily reduced. I directed the house-surgeon to try some of the milder plans of reduction, as the old man was feeble; and intended next day, if he was not relieved, to have a consultation; but to my surprise, on visiting the house next morning, I was in-

formed that poor old Anthony died at about 6 o'clock, A. M. The time that elapsed between the attack and the death of the patient was about twelve hours: a very uncommon result, especially in large ruptures.

The treatment that had been employed for the purpose of effecting the reduction, was one moderate bleeding, small doses of jalap and cream of tartar, and the taxis.

No post mortem examination was permitted by his friends.

CASE XL.

Entero-Epiplocele—Gradual approach of Strangulation, Double Sac—Death.

10th mo. 19th, 1818. An old soldier was admitted into the Almshouse hospital last evening. I saw him this morning, and received the following account.

He had been afflicted with hernia since the year 1793, when he was a soldier in St. Clair's defeat by the Indians. One of the red warriors threw his tomahawk at our retreating patient, the head of which struck him violently in the lower part of the belly, and caused a rupture.

He has been able to reduce the contents of the sac until within the last three years, since which a portion has been irreducible. A few days since, while at Flatbush, on Long Island, he fell from a barn; the hernia immediately increased in size, and he was unable to put it back. He then went to New York, and from

thence walked to Philadelphia. He had been in the city one or two days before his admission into the Alms-house on the 19th. In the evening, one of the house pupils discovered that the hernia was strangulated. His bowels were constipated, and he had vomiting.

In the morning I was sent for, and Dr. Hewson saw him in consultation. The tumour was large, and evidently contained fluid, it was tender to the touch, and the skin covering it was somewhat discoloured. The abdomen was tender on pressure, but not tumid. The pulse and symptoms generally, did not indicate a state of great danger.

We directed enemata of a strong decoction of senna-leaves, and advised that the patient should be placed in a warm bath, and while in the bath should try the taxis himself.

It was concluded to meet at 3 o'clock in the afternoon. But just before this time, the patient unexpectedly expired. He had been in the warm bath for about fifteen minutes, and attempted reduction by the taxis. He complained of feeling sick in the bath, and was removed to his bed, and about an hour after he died.

Dissection.

The hernial sac was unusually large, and contained ten or twelve inches of the small intestine, with a great part of the omentum. The bowel was in a state of complete gangrene; the omentum appeared sound, except a small portion which was in contact with the bowel. The lower portion of the omentum was changed in structure, as if it had been long excluded from the abdomen. The hernial sac was very much contracted at its lower portion. In the centre of the contracted

portion there was a round aperture about the size of a dollar. This contraction presented the appearance of two sacs communicating by an orifice. The lower sac contained that part of the omentum which was hard, and had been irreducible. The large mass which had recently descended, was contained in the upper portion. Marks of extensive peritoneal inflammation were observed in the abdomen, and adhesions were formed amongst the intestines. Owing to the strangulation of so large a portion of omentum, the arch of the colon was drawn towards the abdominal ring, and the stomach was displaced from its natural position.

CASE XLI.

Hernia—Semi-Strangulation.

12th mo. 2d, 1820. I was called this morning to see J. P., a black man, at the Philadelphia Almshouse. He was labouring under a hernia. The descent of the parts had taken place two days before.

The tumour was large and tender; the abdomen rather tense; the tongue furred; the pulse not much excited; and there was no vomiting.

I ordered the patient to be placed in a warm bath, and directed castor oil, of which he took two ounces. He had previously had an enema, which had operated twice. In the *afternoon*, as the oil had not produced its effect, ordered jalap gr. x. with crem. tart. \mathfrak{z} i. to be taken every hour. At 9 o'clock in the *evening*, the orderly man reported that the patient had had two free

stools. The hernia was still down; the abdomen tense, and tender on pressure; the tongue much furred. The symptoms were so threatening, that my colleagues in consultation entertained serious views of the propriety of an operation. I rested my opinion in favor of delay, upon the fact of the patient having had free stools; for, indeed, what more could an operation effect than this? It was agreed to watch the case, and consult again if necessary; and the jalap and cream of tartar were continued.

3d. *Morning*. The patient was freely purged by the medicine. The hernia was still down, but the abdomen had lost its tension, and was now flaccid. In the *evening* I returned the protruded parts into the cavity of the abdomen very easily, and applied a truss.

4th. I found my patient well.

CASE XLII.

Mortified Spot producing death—Hydatid in the Sac.

On the morning of the 21st of 8th mo. 1806, I visited E. F., a delicate woman aged about forty-five years, residing in Lætitia court. She stated that she had been subject to hernial descents for the last two years, but had always succeeded in returning the bowel without medical aid.

The present attack commenced on the night of the 17th instant. She had a discharge from the bowels immediately after strangulation, but none since. The only medicine she had taken was a dose of salts, and herb

teas prepared by her neighbours. The tumour was tense and painful to the touch; the tongue was furred; and the pulse moderately tense. I bled her about $\bar{x}xii.$; she complained of being sick. I then attempted the reduction by taxis, but failed. I directed ice to be applied to the tumour, a purgative enema, and small doses of jalap and cream of tartar, with oil of cinnamon every two hours. I visited her again in about four hours. The tumour was more flaccid. I again tried the taxis without effect. The powders had been rejected by the stomach. I directed the warm bath, and a continuation of ice to the tumour.

I again visited her in about four hours. Her appearance was now more alarming. The pulse was sinking, the vomiting continued, and the hernia remained irreducible. A consultation was called of Drs. Griffiths, Hewson and Dorsey, who met me in a short time. But the change was so great that it was thought most prudent not to attempt the operation.

In a few hours after she died.

Dissection.

On dissecting off the integuments, the tumour presented a purplish appearance. On opening the sac, a quantity of bloody serum escaped. A very small portion of small intestine was involved in the stricture, which was in a gangrenous state. Appended to this was a *hydatid of considerable size*. The intestines above the strictured part were distended with flatus. The appearances of inflammation within the cavity of the abdomen were very slight.

CONCLUSION.

FROM the preceding views, predicated on a variety of cases narrated in this work, the author has deemed it expedient to submit, in the form of corollaries, a series of practical precepts, which may, perhaps, prove important as a guide to the young practitioner.

In every case of colic, always suspect strangulated hernia.

Be not deceived by a free operation from the bowels; for it generally takes place directly after the occurrence of strangulation.

The symptoms of strangulation are sometimes more violent and dangerous in a small than a large hernia.

Guard most carefully against the employment of force in the taxis. Long-continued and injudicious efforts to procure the reduction of a strangulated bowel by taxis, must greatly increase the danger of the patient. The experience of Dessault on this subject is worthy of constant remembrance—"You may always hope for success in a hernia which has not been touched before operating." A patient who has long been accustomed to put up his own rupture, will generally perform the taxis much better and more safely for himself, than any surgeon can do it for him. Let not professional pride interfere with the dictates of common sense, and the voice of humanity.

In old, or delicate and feeble subjects, have a care about using violent remedies to reduce the strangulated

parts, especially a short time before the operation. They may exhaust the vital energies. The lancet may be carried too far. In some subjects the tobacco injection is far more to be dreaded, than the operation when properly performed.

Cases of concealed hernia call for the most accurate examination of the parts. The stricture may exist at the internal ring, and may readily elude a superficial inspection.

When the symptoms are urgent, "delays are dangerous."

Remember the expressions of the experienced and judicious W. Hey, of Leeds: "I have often had occasion to regret that I performed the operation too late, but never that I performed it too early."

Give a full, clear, and candid statement of the case to the patient and his friends before the operation. Carefully avoid technicalities. Clothe ideas in language that a very plain capacity can comprehend.

Shave the parts before the operation.

In making the first incision through the skin over the tumour, let it be well pinched up as directed in the operation. Use a sharp-pointed bistoury with its back towards the hernial tumour.

Secure all blood-vessels that may be of sufficient size to obscure a delicate dissection by an effusion of blood.

Be not alarmed about complicated layers of fasciæ; they may be cautiously, but very safely divided, conformably to directions in the chapter on the operation.

Always open the hernial sac.

Difficulties may arise from the absence of fluid, and from adhesions, but these may be safely overcome.

In entero-epiplocele, there may be a sac within a sac.

The intestine may be entirely obscured from view by the omentum, which covers it like the crown of an arch. This must be opened before the real seat of stricture can be ascertained.

Be not alarmed at the bloody fluid which may escape from the hernial sac.

Examine if the smell be cadaverous.

After the sac is so far opened as to admit the index finger, always bear in mind that this is the *best director*.

In inguinal hernia divide the stricture upward.

In femoral hernia do the same.

Should the obturator artery present in front of the stricture, the utmost caution must be observed.

I would recommend for the division of the stricture, the curved and blunt-pointed bistoury guarded as directed, and would prefer a dull rather than a sharp instrument. Let the stricture be gently divided by "*nibbling*," rather than sharp cutting.

A very slight division is generally sufficient to admit the finger by the side of the bowel into the cavity of the abdomen.

Should a thick coat of lymph be effused over the strangulated parts, remove it gently with the *flat handle* of the scalpel and the fingers.

Be exceedingly tender in the separation of adhesions.

Remember that the signs of mortification as set down in books are very uncertain. The usual symptoms may appear when the bowel is *not* mortified. They may be absent at the very moment when the bowel *is* mortified.

Let not a dark purple colour of the bowel or even an absence of circulation, decide the question of its actual death.

Most scrupulously refrain from making an incision into the bowel on incomplete evidence.

When the bowel or the omentum are found in a state of mortification, do not lightly esteem the efforts of nature, but rather be cautious about the interference of art. The former is intuitive, capable of eluding many difficulties, and under very discouraging circumstances, it may produce the most happy results. The latter, aided by the lights of experience, and accompanied with sound discretion, may also accomplish much, *at the proper time*. While in some instances, well intended, yet officious interference with the vis medicatrix naturæ, may prove to be zeal without knowledge, which is said to be like courage in a blind horse.

Be especially careful to avoid the return of expatriated omentum into the abdominal cavity, for reasons already assigned.

To cut off a large portion of omentum near its root, and then to return it to its natural situation, subjects the patient to the hazard of dangerous hemorrhage, unless the bleeding vessels be secured by ligatures.

To apply ligatures to the omentum, and then permit it to recede into the abdomen, carrying the ligatures with it, is to adopt a very dangerous practice. It is calculated to maintain the imperfection of a most important cavity, and to induce peritoneal inflammation.

If a necessity should arise during an operation for hernia, to delay procedure for a short time, cover the wound with a bladder partly filled with warm water. It can be retained in its position by the hand of an assistant.

Permit not a dread of *the inflammatory effects of opium* improperly to discourage its use in strangulated hernia. It may be justly regarded as a most valuable article in the treatment for reduction, and also before and

after the operation. When an anodyne enema is used, remember it is more powerful than is generally supposed. I consider sixty drops of laudanum by the rectum, quite equal to thirty by the mouth.

The operation for umbilical rupture in infants, as recommended by Dessault, is believed to be unnecessary. Nature is generally able to effect the cure without any other assistance from art than adhesive strips, and a bandage; or even without such aid.

When called out into the country, always carry along a few spermaceti or wax candles. On this point I speak from experience. Any surgeon who has performed a delicate operation in the dead of the night, in some of our farm houses by the light of "*home-made*" candles, will understand my meaning,

After the operation, gentle laxatives should be used instead of drastic purges. Castor oil is peculiarly well adapted, or a solution of manna and cream of tartar.

Should the symptoms of strangulation continue unrelieved, the steady use of extremely minute portions of calomel, as shown in several cases that are narrated, may produce a most salutary effect.

The diet should be carefully regulated until the immediate danger has ceased. Hard and indigestible aliment is obviously improper. Liquid and soft diet, adapted to the stomach of the patient, is important, such as oatmeal gruel, sago, Indian or rye mush, &c.; the latter is gently aperient, especially if eaten with molasses.

In giving the preceding corollaries at the close of the essay on hernia, it is hoped that the author has not

exposed himself to the charge of tautology. There are few subjects in surgery that require a more thorough and exact knowledge of all the various and probable difficulties that may arise during an operation, than strangulated hernia. The surgeon should be prepared calmly to meet, and promptly to overcome them. When he has a living man lying before him on the operating table, and has proceeded so far as to have his bowels in his hand, he will then most assuredly understand the necessity of having oil in his own lamp. It would be an unpropitious moment to abandon his patient, until he could turn over the pages of a book to study out the course to be pursued. He will then not only *see* but impressively *feel* the importance of carrying a book in his own head, in order to direct the movements of his hand.

PART II.

DISEASES OF THE URINARY ORGANS.

CHAPTER I.

RETENTION OF URINE.

THERE is a marked distinction between retention and suppression of urine. The latter implies a want of power in the kidneys to secrete urine. This is well understood by medical men accustomed to attend yellow fever patients; and it is generally a mortal symptom. During my residence in the Yellow Fever Hospital, when a young man, an opportunity was given of observing the condition of the bladder in this disease, and of confirming it, after death, by dissection.

In retention, the kidneys secrete urine, which is carried by the ureters into the bladder, but, from causes hereafter to be developed, it cannot be discharged. As it accumulates, the viscus becomes distended, and it is not uncommon for the bladder to rise a considerable distance above the pubis, so as to be distinctly felt by laying the hand upon the abdomen. The introduction of the finger into the rectum, also enables the surgeon to ascertain the distension of the bladder.

Patients affected with sudden retention of urine suffer extreme pain—making violent and ineffectual attempts to discharge the contents of the bladder. Seldom do we meet with any description of persons who have stronger claims upon our active sympathy, and whose intense distress appeals more forcibly to the humanity of the surgeon.

I shall not attempt to enumerate all the causes of retention of urine. An extended investigation of cases in books, both ancient and modern, will supply a variety which may be proper for a work purely systematical; *here* it is rather my object to detail the results of my own observations. Among the more common causes, particularly in old people liable to the disease, damp and cold feet may be mentioned. Long-continued and severe exposure to cold may excite a spasm and rigidity in the urinary organs, causing retention and severe pain. Stricture of the urethra, accidents involving fractures of the pelvis, contusions and lacerations of the abdomen and perineum, and an enlarged and tumid state of the prostate gland, will be found among the causes of retention discussed in the following pages.

SECTION I.

DECEPTIVE SYMPTOMS.

Before entering upon the recital of particular cases illustrating the causes which have been enumerated, it will be proper to notice the subject of deceptive symptoms in retention of urine. Unless the practitioner is thoroughly acquainted with this part of the subject, he may be completely deceived. His sagacity and skill may be called in question, and the suffering and even danger of his patient may be greatly increased, by the improper delay of efficient treatment.

After the bladder has reached a certain point of dis-

tension, a copious flow of urine frequently occurs. This may induce the medical attendant to believe that the obstruction has been overcome, and that the disease has terminated happily. The experienced surgeon, however, is always on the alert: he ascertains that the flow of urine is *involuntary*; he places his hand over the pubic region, and feels the distended bladder, which is painful on pressure; he soon discovers that the patient is not relieved. Under these circumstances a fatal termination of the case may be expected, unless prompt and judicious practice be adopted.

Another condition of the bladder may occur, still more deceptive than the preceding; and it may elude the vigilance even of a watchful sentinel. The bladder may discharge a portion of the urine under the *influence of the will*, and may still continue to retain a part until it becomes largely distended. It may be thus gradually and habitually inducted into a state of insensibility, which will admit of very unnatural distension. All this may take place without the intense suffering and immediate danger which accompanies the disease when it occurs suddenly. Instances of this kind existing among patients affected with chronic disease about the neck of the bladder, particularly the prostate gland, are well known to surgeons.

My preceptor, the late venerated Dr. Wistar, used to relate a case of this kind. A respectable old citizen, a judge in one of our courts, was labouring under disease of the prostate gland. On one occasion, while the Doctor was in attendance, he made regular and minute inquiries of his patient, in regard to the discharge of his urine. During an attendance of many days, he was informed by the patient that he discharged his urine at

pleasure; but certain symptoms induced the Doctor to examine for himself, when, to his surprise, he found that the bladder had risen considerably above the pubis. He at once introduced a catheter, and drew off nearly two quarts of urine.

This deception may exist even in cases of an acute and recent character: the bladder may evacuate a part of its contents under the influence of the will, and yet may retain enough to cause an enormous and fatal distension of this viscus. This I have seen, not only in adults, but also in a tender infant—not in the tenth year, or tenth month, but *on the tenth day* of its life. Cases of this will appear in their proper place: that of the infant has been published by Dr. Dewees, and has been disputed in a foreign journal; but, as the surgeon who introduced the catheter, I do positively attest the fact. The urine was put into a bottle, corked and sealed, then weighed, *and it is now in my possession*. I fully admit that the case is of a most uncommon character; but where the narrators are known, it will be accredited.

CASE I.

Enormous distension of the Bladder—Urine discharged under the influence of the will—Death.

Columbia, on the banks of the Susquehanna, Lancaster county, Pennsylvania, 6th mo. 26th, 1812. Being on a visit to my relatives in this place, I was requested by Dr. H. M'Corkle, a practitioner in the town, to visit

with him, a female patient, whom he had been attending for several weeks, with a low nervous fever.

Dr. Thomas Griffith, of the same place, had visited her with him several times, in consultation. About ten days previously to my seeing the patient, Dr. M'C. had perceived a tumour in the abdomen, which had not risen far above the pubis; but had been steadily increasing, accompanied with considerable tenderness of the abdomen on pressure. As the case was obscure to the physicians in attendance, my opinion was requested.

The patient was a young married woman, delicate in her frame, and the mother of three children. Her skin was cool; pulse very frequent and feeble; tongue moist, moderately furred, and of a light-brown colour in the middle. She was in a very exhausted state. On examining the abdomen, one might readily have supposed, from the size of the tumour, that the patient was almost in the last stage of utero gestation. I could distinctly perceive the fluctuation of a fluid, and should have supposed the case to be ascites; but on carefully passing my hand over the abdomen, I clearly discovered a circumscribed tumour. Between the superior part of the tumour, and the termination of the xiphoid cartilage, there was a small space, which retained its natural appearance, which could not have been the case, had the swelling arisen from a general effusion of fluid within the abdominal cavity. As the tumour occupied the anterior and central part of the abdomen, it was not likely to be ovarian dropsy, nor would the history of the case justify such a conclusion.

My attention was now directed to the bladder. On inquiry, I was assured that the patient *passed urine in considerable quantities, and under the influence of the will.*

But knowing that this might occur while the bladder is suffering from great distension, I advised the introduction of the catheter. We gave her a few drops of laudanum, and at the request of the attending physician, I introduced the instrument without the slightest difficulty. Very high-coloured urine began to flow through the catheter, and as it flowed the tumefaction of the abdomen gradually lessened. After about two quarts had passed off, a paroxysm of extreme restlessness occurred. The patient insisted on rising from bed, and no persuasions could induce her to remain quiet. I was under the necessity of withdrawing the catheter. Her exertions evidently exhausted her. She sat upon the close stool, and had a slight discharge from the bowels. The pulse sank; cordials were exhibited; but all efforts to arouse the system failed, and in a few minutes she expired.

In order to guard against debility, arising from a removal of distension, a broad bandage was passed around the abdomen, as in tapping for dropsy, before she was permitted to sit erect. I think it probable that several quarts of urine remained in the bladder. Permission was asked to open the body, but was not obtained.

CASE II.

Retention in an Infant—Bladder greatly distended—Death.

6th mo. 25th, 1822. I was called by Dr. W. P. De-wees, to visit a female infant of G. D. B., on the tenth

day after its birth. The history of the case is as follows:

At birth the child was firm and plump, and continued healthy for several days. It passed urine freely. On the night of the 20th it was very uneasy; the next day it cried very much, and appeared to be in great pain, which came on in paroxysms. It passed no urine. The parents remarked, that the infant had evidently shrunk, and was now smaller than at birth. It continued in this state until the morning of the 25th, the child getting worse, and being at times in great agony. The stools were as green as the expressed juice of rue.

When I saw the patient, the belly was enormously distended, and the veins on the surface were greatly enlarged. Dr. Dewees had left a note, stating the case, and requesting me to be provided with a small catheter, as he was under the impression that the bladder was distended. I introduced a very small flexible gum catheter into the bladder; no urine followed, and I was really inclined to the opinion that the distension arose from some other cause; but Dr. D. being convinced that the tumour arose from distended bladder, I withdrew the tube, and on carefully examining it, I found it was somewhat obstructed. As it was so very small, the slightest impediment would prevent the passage of urine through it. I had omitted to clear the tube, by passing the stilet through it, before its introduction, which ought always to be done; from a neglect of it, I might have left this patient under a false impression, if Dr. D. had not expressed his opinion of the case so decidedly.

After passing the stilet through the catheter, it was introduced a second time, and the urine then flowed in a very small stream, and ample evidence was furnished

of the state of the bladder. As the discharge continued, the tension of the abdomen diminished, and the child actually fell asleep while the catheter was in the bladder. The bore of the instrument was so small, that about three quarters of an hour elapsed before the contents of the bladder were evacuated. At the close of the operation the distension of the abdomen had entirely subsided, and on measuring the quantity of urine which had been drawn off from this tender infant, it actually measured *eighteen and a half ounces* avoirdupois weight.

26th. Drew away by the catheter several ounces of urine in the morning, and again in the evening. The mouth and tongue of the little patient are covered with aphthous sores. The labiæ pudenda—which were protuberant, and much inflamed previous to the introduction of the catheter—have improved in appearance.

27th. The aphthous disease appeared to have extended through the route of the alimentary canal, and this day the patient died.

CASE III.

Incontinence, with Retention of Urine.

— Girard was admitted as a patient into the Pennsylvania Hospital sometime in the 12th mo. 1824, labouring under an incontinence of urine of some months standing. Two or three days after his admission, he drew my attention to a swelling of his abdomen, which he said had existed for some time. It presented very much the appearance of the abdomen of a woman somewhat

advanced in pregnancy. A hard tumour extending above the umbilicus, and having some little elasticity, led to the introduction of a catheter, and at least three quarts of urine were drawn off by the instrument, to the great relief of the patient. After this, the catheter was introduced twice in every twenty-four hours, for a length of time, and about half a gallon of urine was evacuated at each operation. The patient finally recovered.

CASE IV.

Retention from Exhaustion and Nervous Irritation—Urine Discharged under Influence of the Will.

12th mo. 2d, 1830. G. M'C., a member of the legislature from the interior of the state, came to the city to consult Dr. Physick and myself. He had been for a long time subject to hemorrhoids, which had been attended with profuse hemorrhage, by which he had been nearly exhausted.

He was extremely pale, was affected with violent palpitation of the heart; vertigo; hurried respiration after the least exertion; throbbing of the temporal arteries; frequent attacks of cough; nausea and vomiting; severe erratic pains; œdematous limbs; and a sensation of fulness in the cardiac region.

On the 3d, assisted by Dr. Physick, I passed two wire ligatures around the hemorrhoidal tumours. On the next day his exhaustion was extreme, accompanied with restlessness and delirium. While I was with him, he

passed, under the influence of the will, a considerable quantity of pale urine; but as his restlessness was unabated, I was induced to suspect that the bladder was not yet relieved. A close examination proved that my suspicions were correct. I immediately introduced a catheter, and drew off at least a quart of urine, to the great relief of the patient. His restlessness and delirium subsided, and he fell into a tranquil slumber.

CASE V.

Incontinence and Retention of Urine.

11th mo. 11th, 1834. I was consulted by J. H. C., a respectable merchant, labouring under incontinence of urine, attended with considerable pain. I had several times prescribed for this individual, during the past year or two, for symptoms denoting irritable bladder, of which he had been relieved by diluent drinks, venesection, &c. I found he had been suffering for several days from great difficulty in voiding his urine. He felt an inclination to urinate every twenty or thirty minutes, and passed but a small quantity at each attempt. He was unable at this time, to pass his water, while standing, without having a discharge from his bowels. I explained to him my views of his case, and advised him to allow me to introduce a catheter; he was very anxious, however, that some other means should be tried, from a dread of the instrument and from a fear that his accustomed occupation would be interrupted. I directed him to be bled; to drink freely of flaxseed-tea;

and to use anodynes. As he was very improperly serving on a jury in one of our courts, I did not see him for several days. On being sent for again, I found the irritation had increased so much, that on every attempt to void urine he was threatened with a discharge from the bowels. His appetite had failed; his pulse was quite feeble; and he was somewhat emaciated. As he was discharging his urine frequently at this time, he could not suppose that his bladder was distended; but on introducing the catheter, I drew off about half a gallon of water, to his great surprise and relief.

The operation was repeated for several weeks, morning and evening, by myself or son. At each introduction a large quantity was drawn off, although he continued to discharge urine during the intervals. I instructed him in the manner of introducing the instrument for himself, with which he soon became familiar, and he then used it, generally three times every day, drawing off in this manner, about three pints, and discharging in the natural way about one pint.

He still continues this practice. His health is very much improved, and he is able to attend to some business.

SECTION II.

RETENTION FROM THE EFFECTS OF COLD.

Long continued, and also sudden exposure to cold, may bring on severe spasmodic contraction of the urethra, causing retention of urine, and much dis-

tress to the patient. These are instances in which stimulants may sometimes be employed with advantage. In illustration of this point, I will introduce the following case.

CASE VI.

Retention from Cold.

Many years ago, one very cold night, I was called from my bed by a watchman, who said he had with him a man who could not pass his urine. As I resided at no great distance from the watch-house, and was apt to be called up by the city watch in cases of trouble among their prisoners, I felt much inclined to remain in a warm bed during such an inclement night. I advised the officer to carry the man to the watch-house, and keep him in a warm room; promising that I would call in the morning, and have him conveyed to the Infirmary. The poor suffering patient, however, felt himself a party concerned in the case, he fixed himself down on a bench at the door, and was determined to give a voice on the occasion. He immediately commenced a howling under the window very analagous to that of a large dog. It was sufficient to disturb the neighbourhood. I was compelled to appease him by an assurance that I would come down and attend to his case. I soon had cause to rejoice that I listened to his complaints. He entered my house—he was completely chilled, his bare skin visible through his tattered garments—his condition was a fair example of human degradation and wretchedness.

I attempted to pass the catheter, but the urethra was in such a state of spasmodic contraction, that it was impossible. I procured for him some gin; the poor wretch swallowed it with avidity; he took two glasses. After warming him, I sent him to the Hospital, accompanied with a note to the house-surgeon, and then slept myself more soundly than I should have done had I turned a deaf ear to his cries. Next morning I found all the difficulty was terminated. The spasm was relaxed and the urine passed freely. Here the gin was useful; but very great caution is required in employing such a remedy in ordinary cases.

SECTION III.

RETENTION OF URINE IN FEVER.

When we contemplate the varied conditions of the system as displayed in the progress of febrile diseases—when we discover the chain of healthy associations to be broken, and a new order of morbid and irregular actions to arise and gain the ascendancy, it ought not to be a matter of surprise that the urinary organs should participate in the general derangement. It is certainly a source of regret that this simple fact is too often overlooked by attending physicians—more especially by those who are not familiar with surgical practice.

The condition of the bowels in cases of fever, is deemed a most important subject of attention by every judicious practitioner. The alvine discharges are in-

spected; inquiry as to the quantity, colour, and frequency of stools; voluntary or involuntary; all these follow as natural, every-day questions, in our attendance on fever patients. Great irregularity in these respects is often observed; and, especially when delirium occurs, the most ample evidence is afforded that constant attention on the part of the physician and nurse is absolutely necessary.

Should these inquiries be neglected, the medical attendant would probably soon make himself the subject of severe and just criticism, by that important and useful class of assistants in the chambers of the sick—intelligent matrons and nurses.

Happy would it be for many a suffering patient, if the morbid condition of the urinary organs were as closely investigated by physicians and nurses, as the disorders of the alimentary canal! This declaration is predicated, not upon the experience of a day, but its truth has been established in my mind by many years of observation. I offer it as a decided opinion, that many a patient has suffered extremely in the progress of fever, from this unsuspected cause. His primary disease has been aggravated, and his danger increased for want of a true understanding of his actual condition. The urinary bladder may be even fatally distended without a suspicion being excited as to the fact; more especially if the patient be in a state of delirium. Every experienced surgeon is familiar with this subject, while with the mere physician it may pass without due attention.

The following cases afford examples of this condition of the bladder in fever.

CASE VII.

Retention in Fever.

I was called some years ago, in consultation with Drs. Fairlamb and Coates, of Chester county, to visit a respectable old miller, residing thirty-two miles from the city. A letter from his attending physician was received, stating that the patient had fever, and in the course of his description of symptoms, he mentioned that there was incontinence of urine. I at once anticipated the state of the case, and according to my invariable custom, went provided with catheters. On examining the patient my suspicions were fully realized, the bladder was distended although urine flowed from the patient. I introduced a catheter, and drew off the accumulated urine, to the great relief of the old man, although he died some time afterward with his primary disease.

CASE VIII.

Retention in Fever.

In the summer of 1819, M. P., one of my pupils, was the subject of a dangerous and protracted fever of a remittent form, accompanied with great nervous irritation, without delirium. My departed friend Dr. Samuel P. Griffitts, kindly aided me in consultation.

In the course of the fever, the bladder participated in the derangement of the system, and he was unable to expel its contents. I was under the necessity of introducing the catheter, through which the urine flowed freely, to the great relief of the patient; the use of the instrument was continued several times in twenty-four hours, for at least ten days. He gradually recovered from the fever, and acquired the natural power over the bladder.

CASE IX.

Retention in Fever—Deceptive Symptoms.

In the year 1832, I was called in consultation with my friend Dr. Otto, to see J. F., a young merchant.

He had been the subject of a severe fever for some days, and was involved in great danger. At one period he had delirium, was exceedingly restless, and distressed. We suspected distension of the bladder, but on making inquiry of the nurse, were assured that he passed his urine, and if I recollect rightly, it was submitted in a vessel for our inspection; but such was the restlessness of the patient, that an accurate examination was determined on in consultation.

The tumid state of the abdomen above the pubis, accompanied with tenderness on pressure, left no doubt on our minds as to the cause of these symptoms. A catheter was introduced, and a considerable quantity of urine was discharged. The operation was followed

by striking relief to the patient, and a mitigation of his alarming symptoms.

From this period there was a gradual amendment; but more than a week elapsed before the functions of the bladder were so far restored as to dispense with the use of the catheter.

SECTION IV.

RETENTION FROM CONTUSIONS OF THE BODY.

While I was surgeon to the Pennsylvania Hospital, my services were frequently required for patients who had received severe contusions of the abdomen. The extensive brickyards, and gravel banks, in the immediate vicinity of Philadelphia, form a fruitful source of accidents of this description. I was early impressed with the importance of watching the condition of the bladder in these cases. My attention was particularly directed to this subject, in consequence of a patient being brought into the institution who was caught under a caving bank. On examination, we could discover no fracture of the pelvis, though the patient suffered great pain, and was unable to pass his urine. The catheter was introduced, and frequently repeated. When reaction occurred, there was considerable fever, and blood was abstracted. The patient finally recovered.

This case induced the following reflections: If heavy pressure upon the abdomen, suddenly induced, is sufficient in some instances to fracture the bones of the

pelvis, it is easy to conceive that the soft parts, especially the parietes of the abdomen, and even the viscera including the bladder, may be, from the same cause, involved in contusion, laceration, and their consequences.

In this condition of the parts, it must be obvious that, from the necessary contraction of the injured muscular fibres, the natural efforts for the expulsion of urine from the bladder cannot be made without greatly augmenting the distress of the patient. Hence it may happen that either from inability on the part of the patient, or from the dread of extreme pain resulting from the contraction of the abdominal muscles and the bladder, the urine is permitted to accumulate, thereby increasing the suffering and danger produced by the original accident.

A considerable number of cases of this description have fallen under my observation, and I am prepared to lay it down as a settled principle, that in every instance of severe contusion of the body, a steady watch should be kept upon the bladder. If pain or difficulty attend efforts to pass urine, the catheter should be invariably employed. By this course the contused parts are kept at rest, and the danger of inflammation and fever is diminished.

It may also be remarked, that the first effect produced by a severe contusion of the body, is to prostrate the nervous system, and to induce severe pain. The patient generally complains of chilliness, his skin is cold, the pulse feeble, and the features contracted. In this condition, the practitioner should endeavour to allay pain by opiates, and wait for reaction of the system before he attempts the abstraction of blood. This

caution is rendered the more necessary, from the popular cry for bleeding, which always prevails, when severe accidents of almost any kind occur.

When, in addition to the injury of the soft parts, the bones of the pelvis are fractured, it is evident that the contraction of the abdominal muscles, will cause a movement of the fragments upon each other.

Under these circumstances, the call upon the surgeon is still more imperative, to adopt, and rigidly to adhere to the practice of absolute quiescence of the injured parts until, aided by time and appropriate treatment, nature shall accomplish a cure.

This class of accidents is sometimes farther complicated by a rupture of the urethra.

To illustrate these latter conditions, the two following cases are presented.

CASE X.

Fracture of the Pelvis and Ischuria.

6th mo. 2d, 1819. J. R., an Irish labourer, aged forty-five years, was admitted into the Pennsylvania Hospital, with a fracture of the pelvis and contusion of the abdomen, caused by a loaded wagon passing over him. He was a patient of the house, for some months during last year, with chronic rheumatism. He was slightly lame at the time of his discharge last autumn. On the day of his admission, while attempting to cross the street, in front of a loaded wagon, drawn by five horses, he was knocked down by the leader, and the whole

load, weighing three tons, passed over him. The wheels of one side crossed the sacrum and ileum behind, as he lay on his belly. He was bled immediately after the accident, and then carried to the Hospital.

On examination, crepitus was discovered at the posterior edge of the left os innominatum, accompanied with violent pain on both sides of the pelvis, about the sacro-iliac symphysis. The patient was laid on his back, and supported by pillows, &c. His pulse was weak, and appeared for a few minutes to be rapidly sinking. The extremities were cold, and the mind wandering, with a slight degree of coma.

Tt. opii. gtt. xxv. were given him, and directed to be repeated every six hours. No other injuries, except bruises, were discovered in other parts of the body. When any attempt to move him was made, he complained of violent pain in the ascending ramus of the pubis. Some urine was discharged under the influence of the will, but the bladder could not be evacuated, without the frequent use of the catheter. The patient was kept perfectly quiet in a recumbent posture, until the fracture united.

After remaining in the Hospital for a long time, he was finally discharged. Dr. Reynell Coates, who was at the time house-surgeon, informs me, that he saw this man some years after he left the Hospital, and that he had recovered sufficiently to move about, although he was still lame.

CASE XI.

Fractured Pelvis—Rupture of the Urethra—Muscular Pouch in front of Bladder.

9th mo. 28th, 1818. H. O'C., a poor labouring man, was brought into the Pennsylvania Hospital under the following circumstances. He was engaged in digging under a bank of earth near the Schuylkill. The bank gave way above, and a large mass of earth fell upon him. Some workmen in the neighbourhood came to his assistance, dug him out, and he was conveyed to the Hospital.

When I saw him, he complained of considerable pain, principally in the abdomen, which was tumid, and tender on pressure. His pulse was feeble, and his skin cool. I directed mild nutritious drinks, with opiates to allay pain, intending to wait for reaction of the system, before adopting a depletory course.

29th. The system had not reacted. The abdomen was very much swollen, tense, and extremely tender to the touch. As he had passed no urine since his admission, Dr. B. H. Coates, the house-surgeon, had very properly introduced a catheter, through which only a small portion of bloody urine had escaped. In the evening I again introduced the catheter; it passed under the arch of the pubis, but a small portion of blood and urine escaped as before. I was convinced that the instrument did not pass as far as it usually does, when it enters the bladder, and was induced to believe from the symptoms, that the viscus was ruptured. Several eva-

cuations from the bowels were produced by castor oil, given in small doses, and aided by an enema. But the system never reacted.

I introduced the catheter twice after this, with the same result. On the last introduction I was much surprised to perceive bubbles of air passing out through the instrument. The patient vomited frequently during his short illness; and died about midnight on the 1st of 10th mo., being the fourth day after the accident.

Dissection.

10th mo. 2d. I was present this day, when Dr. B. H. Coates examined the body.

The abdominal muscles below the umbilicus were severely contused, being black with effused blood. On opening the cavity of the abomen, the stomach and intestines appeared healthy, but enormously distended with flatus.

The left os pubis was fractured, and the fractured portions separated from each other for some distance, so that three fingers might be passed between the opposing surfaces. In consequence of the extent of this fracture, the soft parts in the vicinity were very much lacerated. The posterior portion of the urethra, under the arch of the pubis, had been ruptured, and contained an opening nearly large enough to admit the finger. Through this aperture the urine had escaped, and mixing with the effused blood, had distended the lacerated parts anterior to the bladder and peritoneum; forming at this part a large pouch, like another bladder in front of the true one. In consequence of its free passage in this direction, the urine had not been infiltrated into the cellular tissue, about the perineum and scrotum, as ex-

tensively as it generally is in cases of ruptured urethra. The muscular structure lining the pouch was of a dark colour, resembling gangrene.

In this case, I believe the catheter never reached the bladder, but passed through the aperture in the urethra, and entered the pouch in front of that organ.

SECTION V.

RUPTURE OF THE BLADDER FROM CONTUSION OF THE ABDOMEN.

When the bladder is in a state of distension, the application of external force may have the effect of rupturing the organ. This is a very rare accident; one case has fallen under my observation, which I will briefly narrate.

CASE XII.

Rupture of the Bladder—Death.

A poor blind man was brought into the Almshouse hospital, under the following circumstances:

He slept in the third story of a house, built for a store, in which a door opened toward the yard below. He rose in the night for the purpose of voiding his urine, the bladder of course being distended. In attempting to find the window, he fell against the door, which opened, and he was precipitated into the yard.

He fell with the abdomen across a fence, and to use his own simple language, "his belly struck first." He was taken up, and was conveyed next morning to the Almshouse.

I saw him soon after his admission. The abdomen was tumid and tense, leading me, in the first instance, to infer distension of the bladder. He had passed no urine since the accident. On introducing a catheter, a considerable quantity of blood mixed with urine, flowed through the instrument. But the tension and uneasiness increased; he complained of severe pain in the abdomen, and in about thirty hours after the injury, he died.

Dissection.

The fundus of the bladder was ruptured—urine had escaped into the cavity of the abdomen, producing extensive peritoneal inflammation.

An account of a case of ruptured bladder, under the care of my friend Dr. George Uhler of this city, was drawn up by him, at my request, eighteen months after its occurrence.

It exhibits a highly interesting example of lesion of the bladder, from external violence, which resulted in a complete solution of continuity in the injured part, and an effusion of urine into the cavity of the peritoneum, terminating in the death of the patient.

CASE XIII.

Contusion of the Bladder—Lesion of the Fundus.

Dr. Uhler was called to the patient in the morning, and received the following history of the case. On the

previous evening, the poor man had eaten very freely of water-melon, after which he was romping near his door with some of his young neighbours, when he accidentally ran against a post, and received a severe blow upon the lower part of his abdomen. The pain at the moment was very considerable, but subsided in a short time.

When Dr. Uhler saw the patient the next day, his chief uneasiness was attributed to retention of urine, as he had discharged no urine since the previous afternoon. The case did not appear very urgent, as the patient was walking about his house, and the Doctor merely advised him to take some diuretic medicine. On visiting him in the evening the retention continued, and the abdomen was much distended. The Doctor now suspected the nature of the injury, introduced a catheter, and drew off four and a half pints of urine of a natural appearance. As the urine flowed, the tumefaction of the abdomen diminished, and the patient appeared to be entirely relieved by the operation. He walked out to see a neighbour, and appeared free from suffering or disease.

In a few hours afterward he was suddenly attacked with symptoms of peritoneal inflammation, which continued for several days, when he died.

The body was examined by Dr. Uhler. An opening large enough to admit three fingers was found in the fundus of the bladder. The peritoneum exhibited evidences of high and general inflammation, from the effusion of urine.

Remark.

Should a case of this kind fall under my observation, I would introduce a small flexible catheter, and allow

it to remain constantly in the bladder, in order to keep the viscus entirely at rest, and to favour a contraction of its muscular fibres. By this means the sides of the organ would be approximated, and the efforts of nature to repair the injury would be promoted.

SECTION VI.

RETENTION OF URINE FROM CONTUSION OF THE PERINEUM— TAPPING THE BLADDER.

So far as my observation has extended, accidents of this kind are very rare. When they do occur, they are generally very serious in their character.

The direct application of force to the perineum is followed by tumefaction of the parts, arising from the effusion of blood, and subsequent inflammation. Such a condition cannot take place without involving the urethra in its consequences. The size of the canal is frequently very much diminished, and great difficulty is experienced by the patient in evacuating his urine. So long, however, as he is capable of discharging urine, even though the effort is attended with great pain, the danger is comparatively slight.

When the obstruction becomes complete, his life is put at hazard unless relief is obtained by proper means. While the integrity of the urinal canal is maintained, ultimate restoration, without the necessity of tapping the bladder, may still be anticipated.

If the violence of the injury should have been sufficient to lacerate the urethra, and the passage of a ca-

theter into the bladder is impossible, the only alternative which is presented to the surgeon, is to form an artificial outlet for the urine by an operation.

Two situations have been proposed by surgeons, for the performance of this operation. Some recommend that the puncture should be made through the rectum, while others prefer the operation above the pubis.

I have never seen the bladder tapped but once, and then I was the operator. The case will be fully detailed, in order to exhibit the difficulties of the operation by the rectum, at least in this class of accidents; and to present the reasons why, with my present limited experience, I should prefer the operation above the pubis.

CASE XIV.

Contusion of the Perineum—Retention of Urine from effusion of Lymph.

In the winter of 1820, a patient was admitted into the surgical ward of the Almshouse Infirmary, under the following circumstances:

He had fallen into a tanner's vat, and had sustained a severe contusion of the perineum and the parts adjacent. The scrotum and penis were much swollen. In the latter there was great effusion, so as to cause a very troublesome phymosis. I was obliged to treat this by a number of small punctures with a keen lancet, through which a serous fluid was discharged. The patient passed his urine with very considerable diffi-

culty. I placed him under an antiphlogistic plan of treatment. Although the inflammatory symptoms subsided, yet the stream of urine gradually diminished in size. A small bougie or catheter could not be passed, and it was with great difficulty the bladder could be relieved. I supposed this to be the consequence of preceding inflammation, and that an effusion of lymph had diminished the diameter of the urethra. With a view to promote the absorption of this lymph, I ordered the camphorated mercurial ointment to be rubbed freely and frequently on the perineum. This plan was persisted in for some time, combined with the use of the warm bath. The patient became worse and worse, until at last his strongest efforts were insufficient to evacuate the bladder, which became considerably distended. In this dilemma I was afraid we should have to resort to some serious operation. I endeavoured to introduce a very small catheter without success. Having proved in some instances the efficacy of large catheters after failure with small ones, I introduced a flexible catheter of very large size, with a stilet, and passed it down to the obstruction, pressing it with moderate force against the part. In a little while I felt something to give way, or rather to tear. The catheter then advanced. Directly afterwards another obstruction was encountered by the instrument, but it yielded more readily than the first. Then, to my great joy, the catheter entered the bladder, and the urine flowed freely.

In this case there was evidently an adhesion between the sides of the urethra, producing an almost total obliteration of the canal. The large catheter, by distending the urethra, rent asunder the new-formed parts.

One thing occurred in this case which was remarkable. When the urine began to flow, instead of the exquisite relief usually experienced by the use of the catheter, the patient was seized with severe pain and spasms, attended by strong retraction of testes. He really seemed in an agony, and begged to have the catheter withdrawn. He rose from his bed and requested to be allowed to stand erect. I was obliged to give him sixty drops of laudanum, but did not immediately withdraw the catheter.

My last note of this case is dated several weeks after the introduction of the catheter, and ends with this information:—The patient is still in the hospital; his condition much improved. I think he may soon be discharged cured.

CASE XV.

Retention of Urine from Contusion of the Perineum—Tapping the Bladder.

10th mo. 15th, 1828. Jeremiah Waterhouse, aged about thirty-five years, farmer, a muscular, strong, and admirably well-formed Englishman, was admitted into the Pennsylvania Hospital with a severe injury of the perineum and scrotum. The accident occurred in the following manner:—The patient was in the service of Geo. Bleight, at his farm near Germantown. While in the city with a farm wagon and horses, he was standing on the shelvings of the wagon, when the horses started off; he was thrown from his position and fell astride and in

front of one of the wheels, which struck him with great force on the perineum. After the accident he was carried home, and was visited by Dr. Betton, of Germantown, who advised his removal to the Hospital.

Dr. J. Rhea Barton, the attending surgeon at that time being absent from the city, I was called to visit the patient, and saw him about twenty-four hours after the injury was received.

I found him in great pain; his bladder was much distended, and he was entirely unable to pass urine. The introduction of the catheter had been several times attempted before I visited him by Dr. George Fox, the house surgeon. He found it impossible to succeed. The situation of the poor sufferer was sufficient to kindle up the sympathy of any one that saw him. His distress was intense, yet he bore it with manly fortitude. I put forth my best endeavours to relieve him. Repeated attempts were made to introduce the catheter with all possible gentleness. Every effort was unavailing. I left him after directing that he should be freely bled, and have leeches applied to the perineum, in order, if possible, to reduce the inflammation and tumefaction of the parts. An opiate was prescribed. On my return again that night, the attempt to pass the catheter was renewed, with the same result. At this visit my fears were fully confirmed, that the urethra was extensively lacerated. I ordered a consultation to be called next morning, and left the patient, after directing that he should be kept quiet by opiates.

My colleague, Dr. Thomas T. Hewson, met me at 10 o'clock. We found the patient in great pain, and very anxious for relief. The catheter could not be in-

troduced, and we concluded to tap the bladder from the rectum.

When about to proceed to the operation, I introduced my finger into the rectum, and was forcibly struck with the absence of that elastic feeling imparted to the finger in a common case of distended bladder. Instead of this, it gave the sensation of a soft, doughy substance, as if the indentation of the finger must have remained sometime after it was withdrawn from the part. I requested my friend Dr. Hewson to examine, and his impressions were precisely the same. We concluded that this state of things must be caused by an effusion of blood between the rectum and bladder. We thought it best to proceed with the curved trochar, as the authority of surgeons, perhaps, preponderated in favour of a puncture from the rectum in case of recent accident. I now introduced the instrument, and pushed it through the rectum towards the bladder so far as appeared necessary to reach the viscus. On withdrawing the stilet, nothing but a little grumous blood passed through the canula. We were placed in a painful dilemma. To fail in relieving a fellow creature from extreme suffering was distressing, and we could not avoid feeling increased interest in the patient, from the entire confidence he reposed in us, and the readiness with which he submitted to every thing we proposed.

It was now agreed to make a puncture a little higher up, which was done, and the instrument was pushed as far towards the bladder as we thought prudent. It resulted in bitter disappointment; no urine passed through it. No doubt now remained of a much more extensive effusion of blood between the rectum and bladder than we had anticipated. We met again at 3 o'clock, and

Drs. Physick and Hartshorne, two of the former surgeons of the institution were invited, and kindly attended. The whole case was laid fully before them; they made one more unavailing effort to pass the catheter, and we all united in judgment that the only alternative which remained, was to tap the bladder above the pubis. The patient was not only willing, but desirous of having the operation performed.

Assisted by my friends Drs. Physick, Hewson, and Hartshorne, and in the presence of a number of pupils, I proceeded, and made an incision in the course of the linea alba a little above the pubis, the parts being previously shaved. I carefully dissected down between the pyramidal muscles, and soon felt the distended bladder. I now passed a curved trochar down into the viscus. The stilet was withdrawn, and the urine followed. I had prepared for the occasion a second silver canula, with a rounded point, and perforated with holes on the side like the common catheter. This was accurately adapted to the large canula, so that it could be passed through it into the bladder. This was done, and the bladder was relieved by a copious discharge of urine. The advantage of this second canula consisted in its projecting some distance beyond the other, and presenting to the internal coat of the bladder, a smooth rounded surface, instead of an abrupt edge. The canulæ were now retained in the bladder by means of tapes, and the wound was closed by adhesive strips.

After the operation the patient was kept under the use of opiates, and, for the first few days, upon a low diet. He had but little fever, and passed his urine freely through the canula; though with all the care that could be taken, some portion would escape through the

wound by the side of the instrument. The afflictions of the patient did not terminate here. His scrotum became more tumid, and exhibited evident marks of gangrene. He was now placed on a very generous diet, with bark, elixir of vitriol, &c. Poultices were applied to the mortified parts. Dr. Barton having returned, the patient was placed under his care. A flexible catheter was finally substituted for the silver canulæ; the mortified parts about the scrotum sloughed and healed; but his constitution had received a shock too severe for his ultimate restoration. As he weakened, a most extensive slough took place on his back, and he finally died with hectic fever, 11th mo. 16th, about one month after the accident. On dissection after death, it was ascertained that the two punctures made through the rectum had entirely healed.

The evidences presented on dissection in this case, afforded to my mind the gratifying assurance, that the poor sufferer did not sustain any material injury from the unsuccessful efforts to puncture the bladder from the rectum.

It has settled me, however, in the conclusion, that until more enlarged opportunities for judging on this subject shall be afforded, I shall never again attempt to tap the bladder from the rectum. The opinion of my worthy old master, Dr. Wistar, was decidedly in favour of the operation above the pubis; and it will require some pretty clear evidence to change my present opinion.

SECTION VII.

RETENTION FROM DISEASED PROSTATE.

Among the diseases peculiar to advanced life, is an enlarged condition of the prostate gland. This gland is situated at the neck of the urinary bladder, and is called into action in every effort to evacuate its contents.

The morbid condition of this structure which we are about to notice, first manifests itself by a frequent desire to void urine, obliging the patient to rise several times in the course of the night. This disposition slowly increases, until the calls become very frequent, accompanied with severe pain and straining. As the disease advances, retention of urine to a greater or less extent, not unfrequently takes place, requiring the use of the catheter.

In some constitutions, the inroads of the disease are gradual, and several years may elapse, without any evidence of immediate danger, and the symptoms are regarded rather as a source of inconvenience, than of positive suffering. The aged subject may be kindly permitted to pass out of life with some more acute disease, thus escaping a protracted death from pain and constitutional irritation.

When the complaint assumes its most aggravated form, the sufferings of the patient become intense. The bladder is excessively irritable, and incapable of retaining even a small portion of urine, without producing great distress. I have known a patient in this condi-

tion to be compelled to rise *thirty* times in the course of the night, making at each attempt strong efforts to discharge a very small portion of urine.

As the disease advances, the energies of the system are gradually exhausted. Emaciation, debility, hectic fever, and death are the result.

A post mortem examination reveals the cause of the symptoms just described. The prostate gland, which in a natural state does not exceed the size of a horse-chestnut, may be found equal in bulk to a large pear. Sometimes the enlargement is most conspicuous in the lateral lobes, while in other instances the third lobe seems to have been principally affected. The latter form is the more serious, from the fact of this lobe forming, in a natural state, a small projection towards the urethra, which, when increased by disease, constitutes a large triangular body, overhanging the opening of the urethra into the bladder. This lobe acts the part of a valve, which, under certain morbid conditions, may completely close the opening from the bladder into the urethra; offering a most serious mechanical impediment to the introduction of the catheter, which will be noticed in its proper place. From the peculiar position of the valve it must be evident, that in every effort to expel the contents of the bladder, it is pressed more firmly over the opening, and the obstruction is rendered more complete. See Pl. 1 and 2.

Another striking post mortem appearance, as exhibited in the drawings, is the thickened and rough surface of the inner coats of the bladder. The eye is arrested with a great number of strong bands of different dimensions, and variously distributed, resembling very closely the *musculi pectinati* of the heart. See Pl. 3.

These appearances are produced by an enlargement of the muscular fibres of the bladder. It has been supposed by some writers, that this condition of the parts was produced by the chronic inflammation of the mucous membrane, communicated to the muscular coat. I am disposed to refer them to another cause. I believe that this extraordinary development of muscular fibre depends upon the frequent and violent contractions of the organ, which are inseparable from this distressing malady.

Its explanation may be referred to the same law which regulates the size and development of muscles, which are subjected to unusual exercise in other parts of the body. Who has not admired, in passing along our streets, the powerful flexors and extensors in the arms of some of our woodsawyers, or the swelling deltoid of the blacksmith accustomed to the daily use of the sledgehammer. This same view might be extended to a variety of muscles, more particularly connected with various mechanical operations.

Between the bands formed by this thickened muscular fibre, it is not uncommon to observe pouches of various dimensions, in which calculi are sometimes deposited. As the bands enlarge, the stone is firmly bound down, and may become completely encysted, thus naturally causing a cessation of the symptoms.

SECTION VIII.

TREATMENT OF ENLARGED PROSTATE.

It would be a source of extreme gratification could

we offer the cheering prospect of radical cure, in this distressing malady.

A great variety of remedies have been recommended; but as far as my knowledge extends, they can rise no higher in the scale than mere palliatives. To relieve the violent pain attendant on the disease, we must chiefly rely on opiates, particularly on anodyne injections. Emollient drinks, the warm bath, and sometimes, under particular circumstances, general and topical bleeding may be required.

The frequent use of the flexible gum elastic catheter is generally demanded, and the patient should be instructed to introduce it for himself.

I regard it as important in this disease, which, from its intractable character, and the advanced age of the patient, precludes the hope of a radical cure, that we should adopt such palliative measures as will promote the tone both of the body and mind. Hence moderate exercise in the fresh air, and employment of the mind on passing objects, is greatly to be preferred to constant confinement within the narrow precincts of a sick chamber.

In the more advanced stages of the disease, when the patient is necessarily confined to bed, the obstruction may be so great as to render the passage of the catheter difficult. In these cases the constant wearing of the instrument becomes necessary.

I have recently met with a suggestion in regard to the treatment of enlarged prostate, emanating from a source which entitles it to high respect. It is comprehended in the following extract from G. J. Guthrie on Diseases of the Urinary Organs.

“A question has arisen in my mind, whether any

operation could be done on the prostate from the perineum; and I was led to entertain it, from finding, that in a patient upon whom I had operated for stone, whose prostate gland was much enlarged, I had rendered him a further service in the diminution of the prostate; so that instead of making his water with difficulty, he afterwards made it easily, and the catheter passed with facility, instead of meeting with a considerable obstacle at the neck of the bladder. In fact, I was satisfied I had cured, or nearly so, the disease of the left lobe of the prostate, which I found to be much enlarged during the operation."

To strengthen this suggestion, the author refers to some observations of W. Blizard, read before the Medico-Chirurgical Society, by which it appears that he had several times divided the prostate when in an enlarged condition, though not in a state of inflammation. The condition referred to, is thus described in his own language: "When the inflammation ceases, the purulent matter may remain confined by the *firm investment* of the prostate gland for a length of time, according to various circumstances."

This condition does not present to my mind any confirmation of the opinion of G. J. Guthrie. In the cases operated upon by Blizard, the inflammation had ceased, and the object of the operation was to give exit to confined pus. I have never seen such an operation, and though I should be cautious about performing it myself, I would not attempt to oppose theoretical views to experience from such a source. I have in my own practice, at this time, an elderly gentleman, with diseased prostate, requiring the frequent use of the catheter, and on two occasions nature appears to have relieved him, by the free discharge of

purulent matter from the penis, which I have supposed came from an abscess in the prostate gland. This discharge, after continuing for some time, has on both occasions abated, and finally ceased. The patient is enabled to keep about, and uses moderate exertion in business.

The proposition to lay open the prostate from the perineum, in ordinary cases, demands serious consideration. Should experience confirm the propriety of this practice, it would open a cheering prospect to many aged patients, who are doomed to pass their few remaining days in suffering and sorrow. An enlarged state of the prostate, instead of being a serious objection to the operation for lithotomy, would, under this view, rather invite it, with a hope, that in addition to the removal of calculus from the bladder, the prostate might be radically cured.

I am free to confess with diffidence, that an incision into a part enlarged by chronic inflammation, for the purpose of radical cure, is not in accordance with my views of sound surgical practice.

We must look to the experience of lithotomists, either to sustain or reject this suggestion. In order to be decisive, a post mortem examination should be made in every instance, to ascertain whether the gland is actually diminished in size. Removal of pain, and even a restoration to tolerable health, after the operation for stone, cannot be accepted as evidence of material diminution in the size of the prostate. The gland may be increased in size without producing of itself much suffering to the patient; while the additional irritation of a calculus in the bladder may cause intense pain. Under these circumstances, the removal of the calculus

would render the patient comparatively very comfortable, without, at the same time, producing any other effect upon the prostate, that to relieve it from the irritation of a foreign substance situated in its immediate vicinity.

Although my own experience does not furnish a case of stone complicated with enlarged prostate, in which an operation was performed, yet a striking instance has lately occurred in this city, in the person of the late Chief Justice Marshall. This highly distinguished and excellent man, was subjected to the operation of lithotomy by Dr. Physick, and a large number of calculi were removed from the bladder. The prostate gland was considerably enlarged at the time of the operation, and the third lobe was distinctly felt projecting into the bladder.

The venerable patient recovered most happily, resumed his official duties, and enjoyed a considerable share of health for several years. He died with a disease unconnected with the urinary organs. A post mortem examination was made, and the prostate particularly examined. Dr. Physick, (whose opinion on this point was requested,) explicitly states, that the size of the gland was not diminished by the operation. The preparation is now in his possession.

Here we are presented with opposite experience, derived in both instances from a very high source. The proposition may, however, be still further examined. Admitting that an incision into the prostate will produce a salutary effect, is it not possible, when this gland becomes enlarged, that its firm investment by the membrane mentioned by W. Blizard, may act on the same principle as the thecæ of the fingers in paronychia, or

the thick skin which covers the fingers of labouring men in that disease. Where is the surgeon who has not been called upon by hard-working men in extreme pain in the early stage of felon, before the formation of pus? He understands in a moment that the skin in these cases, acts like a bandage drawn firmly over an inflamed part; and that the primary indication for relief, as well as cure, consists in laying open the tumid finger, and, by a free incision through the skin, thus removing the stricture.

The effect of an artificial bandage on an inflamed limb, is familiar to every experienced practitioner. Who has not seen patients brought into a hospital ward, a few days after receiving a fracture, with the limb firmly bound by a roller. The patient suffering great pain, and the parts rapidly verging on towards gangrene?

These illustrations include inflammation in an acute form; but it is easy to apply the same reasoning to morbid changes in structure, of a chronic character, and thus "the firm investing membrane of the prostate gland" may produce results somewhat analogous to the thecæ and thickened skin in paronychia. Hence it may be supposed, that a division of the investing membrane of the prostate may produce a salutary effect.

After reviewing the arguments in favour and against the suggestion of G. J. Guthrie, in the absence of sufficient experience on the subject, I would modestly venture to say, that the division of the prostate would be hazardous and improper. It must be recollected, that this disease makes its appearance in individuals advanced in years, whose constitutional energies are nearly exhausted, and that a severe operation of the

kind proposed, might sink the system below the point of reaction.

It may be remarked also, in connection with this subject, that wounds of the prostate sometimes result very inconveniently. Dr. Physick states a case, which fell under his notice, of a man whose prostate had been pierced by attempts to introduce the catheter, in unskilful hands. He recovered from the wound, regained his health, and lived for several years; during the whole of which time he was afflicted with incontinence of urine.

One of the most important means of relief in this distressing malady, consists in the dilatation of the passage through the prostate gland. A plan of dilating the urethra, by injecting fluid through a catheter, to the extremity of which a thin bag is attached, was introduced some years ago by Dr. Arnott, of London. It was more particularly applied to the treatment of strictures, though reference is made to its utility in cases of enlarged prostate.—*Treatise on Strictures of the Urethra*, pp. 163 and 178.

Dr. Physick has lately adopted a similar practice, with the most gratifying success. He was consulted in the case of an elderly gentleman of this city, who has laboured for nine years under a disease of the prostate, and has suffered severely from occasional attacks of retention of urine, requiring the use of the catheter. On a late occasion, Dr. P. was called to him, suffering under an unusually severe attack, the continuance and severity of which had almost exhausted him. He prepared a small flexible catheter, to the extremity of which was attached a portion of very thin bladder, firmly secured by silk thread, which was covered with wax. The

instrument thus prepared was introduced without much difficulty into the bladder. Warm water was then injected through the catheter, and the bag thus distended. An attempt was then made to withdraw the instrument. As the distended bag entered the passage through the prostate, considerable pain was produced; but it was allowed to remain for some minutes in this situation, and was finally brought through by gradual means. Some blood flowed on withdrawing the instrument. The operation afforded speedy relief, the health of the patient rapidly improved, and he remained free from a return of his symptoms for more than a year.

The result of this case is truly gratifying; in it we perceive the skilful application of means in the hands of one, who though advanced in life, is still active in his efforts to relieve afflicted humanity.

I am now willing to suggest the result of my own reflections on this subject, after premising that they are predicated on a case related to me by my beloved and departed preceptor, Dr. Wistar. He tapped the distended bladder of an elderly gentleman above the pubis, in consequence of his inability to introduce a catheter; the difficulty being caused by an enlargement of the prostate gland. In this instance the patient wore a gold tube, in the opening made by the operation, through which the urine was discharged without difficulty. From having been the subject of great suffering for years, he was by this means enabled to enjoy comparative comfort; his health improved, and was so far restored that he was in the practice of riding out to his country seat, several miles from the city, not only in his carriage, but sometimes on horseback. Nearly two years elapsed under this favourable change. In the in-

terim the diseased prostate had so far recovered, that the patient could pass water through the urethra freely and without pain. Thinking that the disease was cured, he removed the tube, and relied entirely upon the natural passage. The consequence was, a renewal of the disease in the prostate, of which he finally died. A small fistulous opening continued above the pubis, but the bladder never rose sufficiently high to admit of a repetition of the tapping, and the tube could not be replaced.

The striking relief experienced in this case, is evidently to be referred to the removal of the sources of irritation to which the diseased parts were subjected. If a surgeon is called to a case of inflamed knee-joint, he orders the patient to bed, and fixes the limb in a carved splint, thereby suspending all motion in the joint. He reasonably calculates, that so long as the movements of the part are permitted, inflammation and its consequences may be expected.

The situation of the prostate gland is even worse than that of an inflamed joint, because in the latter, the patient may recline on his bed, and thus temporarily suspend the motions of the part. But the silence of midnight brings no settled repose to the patient with enlarged prostate; his slumbers are short, and he is frequently aroused to the renewal of painful efforts, which are constantly aggravating his disease.

Now let us apply the same principles of treatment to the enlarged and irritable prostate, and if figurative language may be allowed, let it be placed in a splint, or in other words let its functions be suspended. This may be accomplished by tapping the bladder above the pubis, and establishing another outlet for the urine.

Possessing as I do, but little confidence in the remedial agents employed for the cure of enlarged prostate, and viewing even palliative means, in some instances uncertain, I have arrived at the conclusion, that if, in the dispensations of Providence, I should ever be subjected to this malady, I would certainly avail myself as a last resort, of the operation of tapping the bladder above the pubis. It would be far preferable for a man in advanced life, to be subjected to the inconvenience of wearing a tube, through which his urine could be discharged, than to be afflicted with a painful malady, by which he would be led to a slow and painful death.

The following cases are selected as illustrating the manner in which the enlargement of the prostate gland interferes with the discharge of urine.

CASE XVI.

NOTE.

The subject of the present note was a respectable and wealthy merchant of Philadelphia, who, after acquiring a handsome estate, retired from business, to spend the remainder of his life surrounded by the comforts of a happy home; but he was assailed by a painful and protracted disease, which, after years of suffer-

ing, closed his life. My excellent and departed friend, Dr. Samuel P. Griffitts, was repeatedly associated with me in consultation in the case.

I was called to visit him in the winter of 1809. I was sent for in the night. He was labouring under violent pain, which was supposed to be colic, but an examination proved it to be situated in the urinary organs. The patient suffered great distress, and was unable to pass his urine. The catheter was introduced, and I was obliged to repeat it two or three times a day during the violence of the symptoms, and had to resort to the usual treatment by the warm bath, opiates, &c., with moderate depletion. Under this course, his more urgent symptoms abated, but the inability to pass the urine without the aid of the catheter continued, and required my attention for a long time.

As the warm weather approached, he was desirous of spending the summer at his country seat, about six miles from the city. He had a very intelligent coloured lad who waited on him, and I taught this lad the use of the catheter, so that he could introduce it very well.

When the patient returned to the city in the autumn, my attendance on him was resumed. He still required the use of the catheter, although his condition was much improved, and he enjoyed considerable comfort. His disposition was naturally cheerful, and his constitution had not yet become very seriously injured by the disease.

In the winter of 1812—13, I was called one night out of bed, and found him complaining of great pain, attended with considerable fever, and with great exertion, he could pass but a very small quantity of urine. I attempted to relieve him by the usual plan of

passing the catheter, but, for the first time during my long attendance, I could not succeed. A very considerable hemorrhage from the urethra followed my repeated efforts to introduce the instrument. As I used the gum elastic catheter, and was confident that no force had been employed, sufficient to injure the urethra, I referred the hemorrhage to a turgid and inflamed state of the urethra, and was rather pleased with its occurrence, believing that it would have a salutary influence on the local inflammation. In this I was not disappointed. Slight bleeding occurred through the following day; the warm bath with venesection was employed; the bowels were opened; opiates were administered; and, as the inflammation subsided, the urine was discharged, and temporary relief was experienced.

About this time he was deprived of his wife, by a short and severe illness. This domestic affliction was followed by an aggravated form of his primary disease. The irritable state of the urinary organs required frequent efforts to pass small quantities of urine, by night as well as by day.

Dr. Griffitts and myself were often earnestly entreated to render him, if possible, some effectual relief, but our united efforts proved vain. His general health sunk under his accumulated sufferings; from a portly old man, of a healthy and rather florid countenance, he became pale and emaciated; hectic irritation ensued, and all that remained within the power of his medical attendants, was to smooth his passage to the grave.

For a considerable time before the death of the patient, the catheter could not be passed into the bladder; but, after the paroxysm which followed the death of his

wife, he had no attack of retention of urine, requiring immediate relief.

Dissection.

A post mortem examination revealed the true state of the case. The prostate gland was greatly enlarged—the third lobe particularly so,—and the muscular coat of the bladder presented a fine specimen of those large bands which resemble so strongly the muscoli pectinati of the heart.

CASE XVII.

NOTE.

The subject of the present note was an old and respectable merchant, of a very attenuated appearance; remarkably correct in his habits, and precise in his movements. He had never entered the married state, and in the space of seventy years had scarcely ever received a visit from a physician.

I was called to visit him at Moorestown, N. J. in consultation with my departed friend Dr. John Stokes. The following was the history of the case: his disease commenced about two years before my visit. He had a disposition to pass urine more frequently than usual; it had gone on increasing until it had arrived at a point of extreme distress, which confined him to his chamber, and generally to his bed.

His inclination to void urine seemed constant, and but a very small quantity was passed at each effort. He

told me that sometimes he was under the necessity of urinating upwards of thirty times in the course of one night.

On introducing the finger per anum, I found his prostate gland very much enlarged; it was evidently of a tuberculous structure. I succeeded in passing a small gum elastic catheter into the bladder, through which upwards of a pint of urine flowed, to his great relief. The catheter was allowed to remain in the bladder until my next visit, which I paid in three days. I found the patient very much relieved since the introduction of the catheter; it was withdrawn, and another introduced, with directions to renew it frequently. I did not visit him afterward; but understood from Dr. Stokes, that after the first introduction of the catheter, he suffered but little pain, though his system sunk from constitutional irritation, and he died in a few weeks.

Passage of the Catheter in Enlarged Prostate.

In the chapter on the catheter I shall endeavour to lay down rules for the introduction of the instrument in cases of a common character. As this operation, in cases of enlarged prostate gland, involves some important views, it is deemed proper to devote a little space to its special consideration in this place.

In the preceding pages, I have endeavoured to give a clear idea of the enlargement of the third lobe of the prostate gland, and have illustrated it by plates. This enlargement forms a triangular body, with a wide base.

The general directions for the use of the catheter will apply equally well to cases affected with this disease, until the instrument arrives at the extremity of the prostatic portion of the urethra. If any difficulty occurs, the introduction of the finger into the rectum will enable the surgeon to give such a direction to the point of the catheter, (either by pushing it up toward the symphysis pubis, or toward either side of the gland,) that it will enter so far within this portion of the canal, as to prevent the point from being felt. He has now arrived at the most difficult part of the operation, and the finger in the rectum can no longer aid him. The instrument may be made to pass forward until its further progress is arrested by the inflamed and tense third lobe, which acts like a valve in closing the aperture of the bladder.

The position of the point of the catheter, though it can no longer be felt, is well understood by the experienced surgeon. It is firmly pressed against the enlarged third lobe at its base. If an improper degree of violence were used with a silver catheter, it might possibly force its way through this part of the gland into the bladder. "*Arte non vi*" is here the proper maxim.

Instead of using force, the operator must try to elude the difficulty by referring to the exact position of the parts. By withdrawing the stilet, he may sometimes succeed in causing the point of a flexible catheter to advance towards the symphysis pubis, and thus slip under the third lobe into the bladder. Sometimes the silver catheter may be so directed as to cause its point to take somewhat the same direction, by drawing it gently but firmly up toward the pubis; while, at the

same time the handle of the instrument is depressed as far as possible.

Should these methods fail, an attempt may be made to cause the catheter to ascend into the bladder by the side of the lobe, as there is a cleft on each side, between this lobe and the two lateral lobes. To pass the instrument on either side, requires a lateral curvature of the point of the catheter, and in this way it sometimes happens that it enters the bladder.

I was once called in consultation to the Pennsylvania Hospital, to a case of difficulty in passing the catheter. The instrument with the included stilet was introduced as far as it could be advanced, and the urine flowed out through the instrument by the side of the stilet; but on withdrawing the latter, the flow of urine immediately ceased, and on again introducing it, it was resumed. I mentioned to my colleagues, that I believed the prostate gland to be enlarged, and that the third lobe closed up the passage at the neck of the bladder, effectually preventing the complete entrance of the instrument. That when the stilet was in the catheter, it raised up the third lobe, which acted as a valve, and permitted the discharge of urine by the side of it; but when it was withdrawn, the elastic catheter not being sufficiently firm to resist the closure of the orifice by the valve-like third lobe, the flow of urine ceased. The patient and his friends being afraid of an operation, he was taken out of the Hospital, and soon after died under the care of Dr. Barton.

On examination after death, the case presented the appearances which had been supposed to exist. This case led me to the contrivance of the apparatus illustrated in pl. 4. fig. 1 and 2.

This apparatus consists of, first, a flexible metallic canula, (fig. 1,) with a solid beak, but furnished with one eyelet hole, (*a.*) corresponding in position with the two little notches (*b.*) on the elevated rim of the instrument. The eyelet hole communicates freely with the cavity of the barrel of the canula toward the open extremity of the latter. Toward the beak, the groove formed by the continuation of the canal, terminates in an inclined plane rising toward the inner end of the eyelet.—Second, a flexible elastic catheter, which will readily enter the bore of the canula, and which, when thrust forward as far as the eyelet, is raised by the inclined plane, and compelled to shoot out through the eyelet hole, so as to receive a rapid curvature in that direction, taking the position represented in fig. 2. The point of the flexible elastic catheter being seen at *c.*

It will be perceived that the indications fulfilled by this apparatus are few and simple. The canula is sufficiently ductile to take and retain any curvature that may be required in its introduction, and it is sufficiently firm to push up and support the third lobe, while the flexible elastic catheter seeks a passage through the space thus rendered free. Before the introduction, the eyelet hole may be made to present forward, or to either side, thus causing the catheter to take a corresponding curvature in any required direction. The notches on the rim of the canula indicate to the surgeon, at all times, the actual position of the eyelet. This instrument is proposed for trial. Candor requires that I should state, it has not yet been tested by experience.

SECTION IX.

RETENTION OF URINE FROM PRESSURE ON THE SPINAL MARROW.

It is a fact familiar to most practitioners, that pressure on the medulla spinalis is invariably attended with paraplegia and a retention of urine. This pressure may be produced by various causes.

It is witnessed in surgical practice in cases of severe injury inflicted on the spine, producing fracture or dislocation of some of the vertebræ. In violent concussions of the spine, attended with effusion of blood within the theca vertebralis. In scrofulous affections of the bones of the vertebræ, resulting in the formation of matter within the cavity, &c. I have also seen this state of things occurring in the progress of diseases, which fall more particularly within the province of the physician.

Rheumatic or gouty affections may either suddenly or gradually cause pressure on the spinal marrow, and produce paraplegia and paralysis of the urinary bladder. When it is recollected how peculiarly liable are the joints to be attacked with gout and rheumatism, it is rather surprising that the joints of the vertebræ are so rarely affected in this way. Thus gouty concretions about the fingers not unfrequently produce great enlargement and deformity of the parts, accompanied with ankylosis. The same thing, I have no doubt, may take place in the spine; but, happily, its occurrence is very rare. When it does occur, the bladder becomes involved, and the catheter is required. The disease may be mis-

taken for an idiopathic affection of this organ, when in reality its true seat is in the medulla spinalis: as in the following case.

CASE XVIII.

In the year 1816, I was requested to visit an aged and most respectable matron, the wife of a farmer, residing thirty miles from Philadelphia. Her medical attendant, a highly respectable physician, was treating the case as a primary affection of the kidneys or bladder; and when I was called, she was under the use of a decoction of *uva ursi*.

On examination, I found that she laboured under paraplegia, and that the affection of the bladder was simply a consequence of serious and deep-seated affection, causing pressure on the spinal marrow. She was afflicted with rheumatism, and upon an accurate investigation of the case, I felt satisfied that the disease must have arisen from the thickening of the parts about the vertebræ, gradually inducing pressure on the spinal marrow, which resulted in paraplegia. This patient died; but I believe no post mortem examination was made.

I have seen paraplegia suddenly induced, and depending, as I have supposed, either upon severe inflammation terminating in effusion within the theca vertebralis, or upon the sudden effusion of blood, as in apoplexy.

CASE XIX.

In the winter of 1825—6, T. W., a young man endowed with an uncommonly intelligent mind, and an equally amiable disposition, whose promise of talents and usefulness was of no common order; was attacked one night, with most violent pain in the lumbar region. He was one of my private pupils, and resided with his father. His suffering was so intense, that Dr. Hartshorne, who resided in the immediate neighbourhood, was called to him in the night, and prescribed for him. Soon after it was discovered that he was in a state of paraplegia. His uncle, the late Dr. S. P. Griffitts and myself, saw him, with Dr. Hartshorne, on the following morning. The paralytic state of his bladder required the regular use of the catheter. The patient gradually recovered, so far as to be able to walk about, but nearly two months elapsed before he could leave his bed. There was always a perceptible weakness in his lower extremities. He graduated in the University of Pennsylvania, and commenced practice, but in the spring of 1830, he died of pulmonary consumption.

Paralysis of the bladder produced by pressure on the spinal marrow, may be followed by ulceration and lesion of the organ. The abstraction of nervous influence from the bladder, has a tendency to weaken its vital energies. The perfect coaptation, and harmonious action of the different parts of the organ are interrupted, and irregular action ensues. Inflammation takes place, but instead of being phlegmonous and restorative, it is

erysipelatous and destructive. The ulcerative process follows as a consequence. The bladder yields to a solution of continuity in its structure, which under a combined and vigorous action of all its constituent parts, would have been successfully resisted. I believe this fact, and probably the explanation here offered has been published within a few years by an English physician. I know not where to refer, or I would surely do full justice to the author.

A highly interesting case, illustrating this state of things, occurred in my own practice.

CASE XX.

Injured Spine—Inflammation and Ulceration of the Bladder.

In the spring of 1819, C. H. P., a young man possessing great muscular activity, who is reported to have performed some extraordinary feats in running and jumping, met with the following accident, which caused his death.

One night, on returning to his lodgings, he placed his arm round a tree before the door, bent his body backwards, and commenced the operation of whirling himself round with great velocity. While thus engaged, he was suddenly seized with a sense of heat, (as he described it,) in his right side, followed by excruciating pain. He walked into the house, and the family supposed he was affected with colic.

The family physician, Dr. Caldwell, was called, and

some blood was taken from his arm. About half an hour after the attack, he became perfectly easy; but by this time, he was in a state of paraplegia.

I was called about forty-eight hours after the accident, for the purpose of introducing a catheter into the bladder, which was much distended, as he had passed no urine. On examination, it appeared that he had a slight degree of power over the muscles of the left leg and thigh—just enough to enable him to give very slight motion to the limb.—The right leg and thigh were perfectly paralysed. He had no power over the bladder. He was sensible of a slight touch on the paralysed limbs; but could bear to be pinched without pain. This insensibility to pain extended up the spine nearly to the neck. The neck itself possessed natural feeling—also the arms.

The case obviously resulted from pressure on the spinal marrow, most probably arising from effusion of blood within the theca vertebralis. On this point there was a perfect coincidence of opinion in the consultation. It was concluded to attempt relief by changing the system with mercury, with the hope of promoting the absorption of the effused blood; and, if the state of the system required it, to bleed the patient occasionally. The mercurial treatment failed in producing ptyalism. We now applied four large caustic issues to the spine; one on each side of the upper dorsal, and one on each side of the lumbar vertebræ. Purges were freely used, with the hope of promoting absorption. Dr. T. T. Hewson was joined with us in consultation, and concurred in the plan of treatment.

At one time we were flattered, in consequence of his being able to move the right great toe. Several weeks

before his death, he complained of considerable pain in the right iliac region. It did not appear to extend beyond the linea alba. About a week before his death this pain increased; his abdomen became tympanitic; his pulse was more frequent; he had frequent nausea; his countenance sunk; and his strength failed.

From the time of the accident there was a necessity for the use of the catheter, and towards the close of the case, the bladder was so loaded with thick, bloody, and offensive mucus, that a very large catheter was required to draw off the urine. It was found necessary sometimes, cautiously to inject strained tepid water, which aided in bringing away large quantities of mucus.

About forty-eight hours before death, but a small quantity of urine could be obtained through the catheter. On examining the bladder from the rectum, it appeared enlarged, and on pressing the finger against it, I received the idea that it was filled with mucus. Instead of being elastic, as when distended with urine, it appeared to be indented by the finger, as if it were a piece of dough. A few hours before death, he said something had suddenly given way. He appeared to be in great distress for some time. All pain finally left him, and he died remarkably easy, after an illness of about five weeks.

Dissection.

On the day following his death, Drs. Caldwell and Hewson, and myself met; also my pupils, with the present Dr. George M'Clellan, who was a friend of the deceased. At my request he undertook the examination.

Abdomen.—The intestines were found agglutinated

by adhesive inflammation, and urine was discovered in the cavity.

The *Bladder* exhibited evidences of great inflammation, which had run on to suppuration. There were two ulcerated openings in it. The largest of these was on the right side. It admitted the finger very readily. The inner surface of the bladder was covered with mucus, and a gritty concretion was observable, principally toward the neck of the bladder. The whole viscus was greatly thickened, and adhered to the contiguous parts.

The ulcerated opening on the right side of the bladder was attached to a portion of intestine, in which the ulcerative process appeared to have just commenced.

There was found an effusion of blood between the layers of the peritoneum, exactly in the part where the patient complained of the sudden sense of heat at the time of the accident.

Spinal column.—The vertebræ were sawed through, and the spinal canal exposed, without any morbid appearances being presented. We were ready to doubt whether any discovery could be made.

A considerable portion of the spinal marrow was dissected out, and on making a transverse incision through it, there was a clear illustration of the case. A portion of blood had been effused in the very centre of the spinal marrow; it was about three inches in extent, and was found in that portion of the medulla which corresponds to the upper part of the dorsal, and the lower part of the cervical vertebra.

CHAPTER II.

ON THE CATHETER.

THERE are some preliminary matters connected with the catheter which, though apparently of small consequence, will, in the aggregate, be found of importance to the young practitioner.

Catheters, as we have them, may be divided into three classes:—the silver; the flexible metallic; and the flexible gum catheters. Every surgeon should be provided with some of each kind. I find it most convenient to have three silver stilets; from a large to a small size. The silver is much more ductile than iron, and can be made to receive any degree of curvature that may be required, with greater facility. If left in a catheter when the internal surface is wet, it is not likely to rust and destroy the instrument.

To illustrate the subject, I have been accustomed to exhibit to my pupils a flexible catheter which I bought many years ago for two dollars and fifty cents. Now, a dozen may be procured for half that sum. For a young surgeon not very flush of money, such an instrument was, at that time, quite an acquisition. It served a most excellent purpose on several important occasions; but it was laid aside one day, with the iron stilet within it. Sometime after this, on attempting to put it in requisition, it was found, that in consequence of the oxidation of the iron, it was impracticable to withdraw the

stilet; which has never been done, up to the present time. Thus my catheter was rendered useless.

No surgeon should ever leave his house without having catheters about him, especially if he is to go into the country. It would be easy to cite cases to show the importance of this rule, and to show, also, the neglect which at one time pervaded the country practitioners on this subject. I have long been accustomed to tell my pupils, that although I am a man of peace, and, on principle opposed to war in every form, *yet I always go armed*;—not, however, with pistols or *fire-arms*,—but with catheters, or *water-arms*.

I am accustomed to select flexible catheters of such sizes, that one may be placed inside of another, and in this way three may be fitted together. They are carried in a curved side pocket of sufficient depth to conceal them. The pocket must be covered, for some distance up, with buckskin, or else the catheters will soon work their way through the linen, and may be lost. This I know from experience.

A proper curvature for a silver catheter is a matter of great importance. A plate in Hey's, and also in Dorsey's Surgery is very well adapted to the purpose. I have had for many years, an excellent silver catheter, curved by Hey's plate. A surgeon may be placed in a situation where he may resort to a substitute, as proposed by the late Dr. Dorsey. He took the wire from his elastic suspenders, covered it with waxed cloth, and succeeded in passing this instrument into the bladder.

Directions for the Use of the Catheter.

The catheter should be dipped into warm water, or held before the fire to raise the temperature, and it

should then be lubricated with sweet oil, or some other unctuous matter. A large catheter, in an unpractised hand, may be introduced more readily than a small one. This fact is important to the young practitioner, for he might naturally adopt an opposite conclusion. A small catheter may be easily impeded by becoming entangled in the lacunæ of the urethra, which accident sometimes causes much pain; while a large catheter that fills up the urethra, cannot diverge from one side to the other, and distends the canal as it advances. This subject may be illustrated by the common operation of giving an enema. If this be attempted by a bungling hand, the small pipe may deviate from the centre of the anus, and become hitched on the side of the sphincter, causing no little pain to the patient. If the same operator were to attempt the introduction of the finger in ano, after lubricating it with oil, he would accomplish his purpose without difficulty; because the finger dilates the parts as it passes onward.

In the introduction of the catheter into the bladder, an accurate anatomical knowledge of the relative situation of the contiguous parts may prove of essential service. One of the first difficulties is met with in passing the instrument under the arch of the pubis. It is sometimes necessary to pass it downward as far as it will advance, with its convex part toward the pubis; then, drawing the penis upon it, to give it a semi-rotatory motion, pushing it gently forward at the same time, until its concave surface is presented toward the pubis in a line with the *linea alba*.

After the catheter has passed under the pubic arch, it will soon enter the membranous portion of the urethra. If any difficulty arises at this point, two modes

may be adopted to relieve it. The index finger should be introduced into the rectum, and the point of the instrument may be felt through the bowel in the membranous portion. While the operator holds the instrument with one hand ready to push it forward, he can, with the finger of the other hand, elevate the point directly in front of the opening in the prostate gland. This will generally prove successful, and the catheter will then enter the bladder. The surgeon may also give a lateral direction to the point of the instrument, if required; and this is sometimes of the utmost consequence in a diseased state of the prostate gland.

If a flexible gum catheter with a stilet be used, the curvature of the instrument may be varied, and its point turned to the upper side of the urethra by gently withdrawing the stilet a little distance. This may be made clearly to appear, by drawing a stilet from a catheter before its introduction.

Some of the flexible metallic catheters have a small probe-pointed projection beyond the common round termination, so as to enter a contracted or strictured part, and lead the way before the instrument. Some catheters are formed small at the point, and very gradually increasing in size toward the other end. The practice, introduced by my friend Dr. Physick, of appending a portion of waxed bougie as a point for the catheter, (as directed in Dorsey's Surgery,) and allowing it to adapt itself, and become gently insinuated into the part where the obstruction exists, is one entitled to the greatest attention, and is admirably adapted to elude some of the most serious difficulties and dangers connected with retention of urine. The distension of the urethra by the injection of warm olive oil, has been

tried by my friend Dr. Thomas T. Hewson with success.

In all operations with the catheter, the greatest care must be observed to avoid improper force. The maxim "*arte non vi*" is here particularly applicable. For want of attention to this rule the urethra may be lacerated by unskilful hands, to the no small pain and danger of the patient. The variation of curvature, by using a variety of silver stilets, some of them with a lateral bend, as recommended by Dr. Dorsey, I consider very important. I have also, upon the recommendation of Home, attempted to give a permanent lateral curvature to catheters, by keeping them for a long time on stilets variously modified. Sometimes the curvature required is very great. I once saw Dr. Physick introduce a catheter in a case of great difficulty, in which he bent the instrument nearly double. Sometimes catheters may be made to pass easily into the bladder without any stilet.

I consider, as a general rule, the recumbent posture greatly preferable to the erect position in the passage of the catheter. The straight catheter, as recommended particularly by the French surgeons, I have no doubt is well adapted to certain cases, when it is employed by a surgeon familiar with its use.

When I have met with great difficulty in passing the catheter into the bladder, and have finally succeeded, I have generally permitted it to remain for a few days, secured by a tape passed round the penis, and closed by a cedar plug, which enables the patient to draw off his urine at pleasure. In the early part of the treatment, if the instrument causes no unusual pain, I have a preference in permitting it to rest in the canal for

several days. It appears to me that the urethra becomes inured, in this way, to the presence of the instrument, and is moulded in such a manner that less subsequent difficulty is experienced in its introduction. But after the first effects of retention have passed over, I prefer the removal of the catheter directly after drawing off the urine; repeating the introduction every morning and evening, or oftener if required. Advantage may now be derived from encouraging the patient to make moderate efforts to relieve himself in the natural way. In some instances, weeks, or even months may elapse before the use of the catheter can be dispensed with.

The slowness of return to a healthy condition, in many cases of retention, cannot, in my opinion, be referred to a paralytic condition of the urinary organs. If this condition were present, incontinence of urine would be the result; but this is not the case. I have frequently requested my patients, while the catheter was in the bladder, to make efforts to expel the urine. The force with which it is propelled through the instrument on such occasions, gives decisive evidence of muscular power in the bladder. The perfect freedom with which a large catheter may be passed, shows clearly that no stricture or mechanical impediment is in the way. What then is the cause of the difficulty? I am inclined to attribute it to the loss of those sympathetic and harmonious actions between contiguous parts, which, in a healthy condition, are so nicely adjusted, and so accurately maintained. I have either read or heard a simile which places the subject in a clear light; whence it is derived I am now unable to state. The bladder and urethra are compared to two horses in a wagon who

are false to the draft; when one pushes forward, the other pulls back, and when the latter advances, the former pays him in his own coin, and refuses to move; hence it requires no little skill and patience in the driver to adjust the difficulty. It is, I presume, on the principle of restoring the harmonious action of contiguous parts, that Dr. Gibson has suggested, in cases of retention, the practice of pouring water from a considerable height into a vessel beneath, in the presence of the patient, a practice which he has tried with benefit, especially in infants. He was led to adopt this course from the custom of experienced ostlers, who place fresh straw under a horse, and cause a rustling noise, which, it is well understood, invites the animal to a discharge of urine.

SECTION I.

DIFFICULTY IN THE PASSAGE OF THE CATHETER FROM AN EFFUSION OF BLOOD.

Difficulties are sometimes experienced in passing the catheter, from unsuspected causes. It is very important for the surgeon to be aware of these, and of the means of overcoming them.

I shall first notice the effusion of blood into the urethra. In the course of my practice, I have sometimes met with an impediment in the passage of the catheter, which I was at one time unable to explain.

When the instrument has been passed as far down as the arch of the pubis, instead of keeping its usual

course, I have been sensible that the point took a lateral direction, and have been impressed with a fear, that if I were to continue to push it forward, the urethra might be pierced on its side. A case occurred to me some years ago, which enabled me to ascertain the cause of this difficulty.

CASE XXI.

3d mo. 21st, 1819. I was attempting to pass the catheter, in the case of R. D., an old and respectable citizen, who had been for a long time afflicted with calculi in the bladder, and for whom I had frequently passed the instrument without difficulty.

In this instance I was unexpectedly foiled in my first attempts. I perceived some blood at the orifice of the urethra; this I considered of no importance, and pushed in the instrument as usual. The catheter carried something before it, as it passed down the canal, and after entering for a short distance, it was evident that the urethra was completely obstructed. On withdrawing the instrument, blood again rose to the orifice; it was dark and firm, and in a coagulated state. On taking hold of the projecting portion with my finger, I drew out a mass of coagulated blood, several inches in length, which must have nearly filled up the urethra. The catheter was again introduced. It entered without difficulty, and passed along under the arch of the pubis; here it was again resisted, (so far as I could judge by the sense of touch,) by the same kind of mass. On

firmly, yet carefully pushing the instrument forward, it took the lateral direction, which I had often before noticed, but never so fully understood.

I now believed that the urethra was distended at this part with coagulated blood; the catheter could not pass through its centre, but took a course between the coagulum and the side of the urethra, thus preventing the entrance of the instrument into the bladder. I succeeded in introducing it a few hours afterwards.

A short time after this, the old man died, after having suffered most severely from his disease. I examined the body after death, in the presence of Dr. Hartshorne. The prostate gland was very much enlarged; and I took eight calculi from his bladder. Their average size was that of a hickory nut: they were rough on the surface.

Remark.

Reflecting on this case, I came to the conclusion, that in a similar instance, I would attempt to wash out the blood from the urethra, by the injection of tepid water through a small syringe.

A portion of water should be injected, and retained in the urethra by closing the orifice. By this method the water is brought in contact with the coagulum, a portion of which will be dissolved; this is evacuated, and the operation repeated, until the whole mass is removed.

Another source of embarrassment connected with effusion of blood, has fallen under my notice. In this instance the catheter is not obstructed in its passage to the bladder, but the difficulty is to be found in the bladder

itself, and, until the true character of the case is ascertained, the patient is involved in suffering and danger, and his medical attendants in doubt. The following case will illustrate my meaning.

CASE XXII.

In the summer of 1814, I was requested to visit a respectable old farmer residing near Bustleton, who was labouring under retention of urine. His bladder was distended, and numerous efforts to introduce the catheter had failed. It so happened that I was instrumental in procuring relief for the patient. I passed the catheter into the bladder, drew off the urine, and returned to the city, leaving him under the care of his physicians, Drs. Worthington and Smith.

Nearly two weeks after this my attendance was again requested, in consequence of the occurrence of certain symptoms which it was difficult to explain. His medical attendants found no difficulty in introducing the catheter, and some bloody urine would occasionally be discharged through it. Still the patient was not relieved, as he had generally been, and the bladder appeared to be still distended. On examination I found considerable fulness above the pubis. The symptoms of retention were not so violent, as in the first instance, but there was evidently some obscure mischief.

My first object was to ascertain whether the catheter actually entered the bladder. I introduced it with the greatest ease, but no urine followed. On withdrawing the instrument and examining its eye, I found it con

tained a portion of coagulated blood. This immediately led to the suspicion that the bladder was filled with blood. To test the correctness of this conjecture, I returned the catheter into the bladder, and then by means of a syringe, injected very cautiously a portion of warm water. The finger was then applied to the end of the catheter in order to prevent a return of the water, supposing that if blood were the cause, a portion of it would be dissolved. On removing the finger in a few minutes, bloody water escaped through the instrument, and my suspicions were realized.

The whole case was now perfectly clear. I repeatedly injected warm water, retaining it as before, and then permitting it to escape; after every discharge the quantity of warm water could be increased. In this manner the blood was gradually washed out of the bladder, to the great relief of the patient, and very serious consequences were averted.

It sometimes happens, that the surgeon is called upon to pass the catheter, in cases complicated with inflammation of the urethra, or of the neck of the bladder. This condition may either be the original cause of the retention, or the result of long-continued and injudicious efforts to introduce the catheter in unskilful hands. In these cases the system is generally considerably excited, the pulse is active and febrile, the skin is hot, and the patient very restless. Under these circumstances, I have generally made slight attempts to introduce the catheter; but if it did not pass easily, I have desisted and advised the reduction of the inflammation by venesection, leeches to the perineum, &c. The warm bath

and opiates, and particularly a combination of calomel and opium, in the proportion of eight or ten grains of the former to two or three of the latter, have had, on some occasions, a very happy effect. After pursuing this course for a few hours, the threatening symptoms will generally yield. When the inflammation and constriction of the urethra are removed, the instrument may be passed without difficulty.

CHAPTER III.

STRICTURE OF THE URETHRA.

It is not my intention to offer a systematic history of this disease in its multiplied forms; but to confine my observations within defined limits, referring to systematic writers for such parts of the subject as may be left untouched.

A stricture consists in a diminution of some part of the canal through which the urine passes from the bladder. The disease is often first observed by a temporary difficulty in voiding urine, which subsides, and leaves the part in a natural state. The urethra, in this form of the disease, may take on a sudden spasmodic action, whereby the size of the canal is diminished, causing retention of urine, and a difficulty in the introduction of the catheter or bougie.

A difference of opinion exists among writers, upon the nature of this spasmodic contraction of the urethra. Some attribute it simply to elasticity in the structure of this part; while others consider it as the result of muscular contraction. Although distinct muscular fibres may not be demonstrated in the human urethra, yet they may be traced in larger animals, and we are thus led to infer their existence. The effects of muscular contraction are so clearly manifested in the urethra in various ways, that my own mind is satisfied on this

point. The existence of the thread-like stricture appears alone sufficient to establish the fact.

We see this principle more obviously exemplified in the intestinal canal. In cases where death has resulted from long-continued and violent spasm in this part, a post mortem examination exhibits parts of the intestinal tube, in which a diminution of calibre has occurred, presenting an appearance very similar to the effect of a tape drawn around the bowel, so as nearly to obliterate the passage. The same appearance is observed in stricture of the urethra.

The frequent repetition of spasmodic action in the urethra is often followed by inflammation and thickening of the affected part, and may finally result in a permanent stricture.

This more durable form occurs also in the intestinal tube, under like circumstances. I was in the practice of attending an intimate friend, of this city, who was a plumber by trade, and was subject for many years to frequent attacks of colica pictonum, and gout, of which he finally died. A post mortem examination exhibited a firm and permanent stricture of the colon.

The same condition occurs in the œsophagus. I well recollect, while I was a pupil, the case of a lady who had been for a long time affected with stricture of the œsophagus, and who died from inanition under the care of Dr. Wistar. On examination after death, a portion of the tube was so much thickened, that it would scarcely admit a probe.

Strictures of the urethra are accompanied with a corresponding diminution in the stream of urine. In the first stage of the disease this symptom may scarcely be noticed; but as the size of the canal diminishes, the

stream becomes forked or spiral, like a corkscrew; a considerable time is required to discharge the urine; and finally it dribbles away in drops.

The patient generally experiences more or less pain at the stricture, and pain is sometimes complained of near the extremity of the penis. A gleet discharge is also a common attendant on the disease.

When a stricture is so tight as nearly to close the canal, exposure to cold, irregularities from intemperate drinking, with other causes of an irritating character, may produce a complete obstruction and retention of urine.

In some irritable individuals, a train of alarming symptoms may be induced by the introduction of the bougie. I once attended a nervous old bachelor with stricture. In attempting to pass a bougie he was suddenly attacked with a chill, and his symptoms were so extremely violent, that I felt seriously uneasy for the result. It resembled very much the chill of a malignant intermittent, which sometimes prostrates the patient below the point of reaction, and speedily terminates in death. Under prompt tranquillizing and restorative treatment he recovered.

The constant irritation to which the urethra is subjected in cases of stricture, may be readily propagated to the bladder, producing such frequent calls to urinate that the real character of the disease may be overlooked. The kidneys or bladder may be suspected as the primary seat of a complaint, which is in reality located in the urethra.

Dr. Wistar was accustomed to relate to his pupils the case of an old and most respectable citizen, who was under his care with stricture of the urethra. He advised

the use of bougies, &c. To this practice the patient was extremely averse, neither could he comprehend its necessity, inasmuch as he believed his disease was "*gravel*." Under this impression he travelled about, visiting a number of mineral springs, whose waters are famed for the cure of various complaints. He returned home disappointed, and not improved. He now took Dr. Wistar's advice; the bougie was employed, and the patient was restored to health.

Instances of this kind have occasionally fallen under my own observation. I well recollect a patient whom I attended with stricture, whose bladder was so irritable that he was subjected to great inconvenience from frequent calls to urinate. The use of the bougie soon overcame the stricture, and afforded him relief from those symptoms.

The testes may also be involved in serious disease from a stricture in the urethra. This I have repeatedly witnessed in hospital practice. There is reason to fear that some patients have been subjected to pain and mutilation, who might have been saved from both, had the practitioner been fully acquainted with the primary seat of the mischief.

I have received much valuable information on this subject from the work of "Ramsden on the Testicles," an author who has devoted much time to its investigation.

As a general rule, strictures exist about the bulb of the urethra, yet they sometimes form in other parts of the canal. I have seen two cases within a very short distance of the point of the urethra.

SECTION I.

TREATMENT OF STRICTURE.

The more simple and manageable form of stricture, lies within the reach of mechanical dilatation by the bougie. I shall say but little on these cases, referring the reader to the numerous works which treat at large upon this subject. It may be remarked, that even in some very discouraging cases the use of the bougie will generally succeed, at least in relieving the patient, if it will not produce a radical cure. Even though the surgeon is obliged to use a very small bougie in the commencement of the treatment, yet by perseverance and gentleness the obstruction gradually yields.

At the first introduction, the instrument should be allowed to remain but a few minutes, as the patient generally suffers severe pain. As the sensibility of the part diminishes, the bougie may be longer retained, until at last an hour may elapse, without the patient appearing to suffer pain or inconvenience. It is generally necessary to begin the process of dilatation with a very small bougie, gradually increasing the size until an instrument of maximum size can be introduced. The operation should be repeated daily. After the removal of the stricture, a large sized catheter or bougie should be occasionally introduced, with a view of preventing a return.

It has been previously stated, that patients with stricture are very liable to an aggravation of the disease from exposure to cold and other causes, and that a

complete retention is sometimes the consequence. I have occasionally seen patients in a very critical situation from such an occurrence. The bladder has been very much distended, forming a tumour above the pubis, attended with pain, inflammation, and fever. In these cases the indications consist of such measures as are calculated to reduce fever and inflammation, allay pain, and procure relaxation. Hence general bleeding, with the application of leeches to the perineum, the warm bath, either generally or locally to the affected part, with the exhibition of calomel and opium, will constitute the general means of relief. Added to these, the use of bougies and catheters, of different dimensions, should be tried.

In some of these cases, where I felt greatly discouraged, I have witnessed an unexpected and gradual abatement of the symptoms, the stricture has yielded to the remedies, and the patient become able to discharge his urine. Although the pain experienced in this form of the disease is considerable, yet it is not generally so intense as that felt by patients with distended bladder suddenly induced for the first time. Perhaps this circumstance may be referred to the fact, that some patients with stricture of long standing, habitually retain a portion of urine and thus the bladder becomes so accustomed to the presence of an unnatural quantity of the fluid, that its irritating effects are in some degree diminished.

The following case, which fell under my observation during last winter, presents an example of the condition noticed above.

CASE XXIII.

1st mo. 26th, 1834. J. S., a stout muscular man, who had been the captain of a vessel for many years, had been the subject of permanent stricture for the last six years; for which he has occasionally used a bougie. I was called to see him at one of the hotels, on the evening of his arrival from a journey, in which he had been exposed in a stage-coach to unusually cold and inclement weather.

He had been suffering during the day, from retention of urine, being unable to pass his water, except by drops. The bladder was evidently considerably distended. His pulse was active and febrile, skin hot, and he was suffering great uneasiness. In addition to the stricture, the patient was affected with a severe catarrh.

I attempted the introduction of the catheter, but finding the stricture very firm, I desisted after slight efforts. He was directed to be freely bled from the arm, to have a warm bath, and to take pills of calomel and opium.

27th. The patient has passed a restless night; bladder considerably distended. Has not discharged urine, except a little by drops. The introduction of the catheter was again attempted without success. I directed free leeching to the perineum, and castor oil to open the bowels, diluent drinks, warm bath, &c. Frequent attempts were made in the course of the day to introduce the catheter, both by myself and son, but without success. Instruments of various sizes were tried, and a bougie was passed down to the stricture, and retained

there by the patient for a considerable time. The bowels were freely opened by the medicine; but still we were obliged to consign the patient to another night of suffering.

28th. No improvement; has passed a distressing night. He was again bled from the arm, and the introduction of the catheter faithfully tried without success. We feared that it would be necessary to resort to the operation of tapping the bladder above the pubis. My friend and former pupil, Dr. Ashmead, now saw him at my request. He had lately returned from Paris, and had with him a great variety of instruments adapted for cases of this description. After trying a variety of catheters without success, he finally succeeded in passing the stricture with a silver catheter, having a tapering extremity. The end of the instrument was firm and pointed, and well calculated to enter a very small stricture. This form of catheter is recommended by Dupuytren, and has been frequently successful in his hands in very difficult cases. In skilful hands it is certainly an excellent instrument; but when used by bungling operators, its pointed extremity would be dangerous. It is scarcely necessary to add, that this patient was relieved by the operation, and recovered his usual health in a few days.

On the Use of Caustic in Strictures.

Some cases of stricture will not yield to mechanical dilatation, and require to be subjected to the operation

of the knife or the caustic. The latter plan was recommended and practised by John Hunter, and afterward claimed the especial attention of Everard Home, who has written a voluminous work with a view of elucidating its beneficial effects.

The method of applying caustic is a matter of nicety and importance. Home recommended the plan of fixing to the point of the wax bougie, a piece of lunar caustic, about half an inch in length, and about one-third of the thickness of the usual rolls of caustic. The sides of the caustic are to be covered by the bougie plaster, and the extremity only exposed. Having previously ascertained the depth of the stricture, the surgeon dips the bougie in oil and passes it down to the strictured part. It is suffered to remain on the stricture for about a minute, and then removed. After the removal, the patient is desired to make water. This operation is repeated every two or three days, until the surgeon has evidence that the stricture is destroyed.

This plan of applying the caustic is attended with no inconsiderable trouble, in adapting the caustic to the bougie, and sometimes difficulties have occurred in passing it down to the stricture.

I prefer a hollow bougie open at the extremity, into which a whalebone stilet is introduced, having fixed on its end two pieces of silver that act like a clasp, which readily holds a piece of caustic. This instrument is used in this city. After passing it down to the stricture, the stilet is pushed forward, and the caustic applied directly to the part. If any difficulty occurs in the introduction of the instrument, from its sides hitching in the lacunæ of the urethra, a small solid bougie

may be introduced within the hollow one, and in this way a passage may be made for it down to the stricture.

Conditions in which Caustic is improper.

When we consider the probable condition of the urethra subjected to the influence of a permanent stricture, by which a portion of the canal has been for a long time very much contracted, it is easy to conceive that by repeated and strong efforts to pass urine through the contracted portion, the parts behind the stricture will become dilated, and the urine will accumulate in a sort of pouch formed in this situation. In process of time the sides of the canal at this point will become so weakened as to be exposed to the danger of rupture.

When caustic is applied to a very narrow stricture, the object in view is to destroy the part, with the expectation of a slough being separated. Before this can be effected, the canal in the vicinity of the stricture must become inflamed and thickened, and during the process, the urethra at this part may be almost entirely closed. Under these circumstances, very great difficulty is experienced in discharging the urine, and I have known an almost total retention to continue for one or two days. When a slough is detached, a slight increase is observed in the size of the stream of urine, and the risk of closure of the urethra by subsequent applications is diminished.

But it may happen, that the application of caustic may produce a complete obstruction in the passage. The efforts of the patient to discharge urine may be so

violent that the dilated and weakened urethra, behind the stricture, may actually burst. The urine may be extensively diffused through the adjacent cellular texture producing the most disastrous effects.

CASE XXIV.

Rupture of the Urethra from Caustic.

While I was one of the surgeons of the Almshouse hospital, a poor man came under my care affected with stricture of the urethra. It was situated some distance anterior to the bulb, and there was an evident enlargement of the canal behind the stricture. The treatment was commenced by the application of lunar caustic to the stricture. Soon after this, probably within forty-eight hours from the application, while I was passing through the ward, my attention was called to the patient. My feelings were shocked when I discovered that the urethra had given way behind the stricture, and urine was extensively effused through the cellular membrane of the penis, scrotum, about the thighs, and above the pubis. The consequence was inflammation and mortification, which terminated in the death of the patient.

The termination of this case caused me great uneasiness, inasmuch as the caustic had been applied under my direction, and as I had reason to fear, that it had an agency in producing the rupture of the urethra.

Such an accident might have occurred without any surgical interference, as will be shown in the sequel. Yet such a case could not fail to make a deep impres-

sion on any practitioner, whose mind was imbued with a just sense of the responsibility resting upon him, when the life of a fellow being is placed in his hands. It has fixed my determination never again to apply caustic to a stricture under such circumstances. I have considered it a duty to state the case honestly, as an instance of injudicious practice. It is the part of humanity to err. I have long thought, that if medical men were careful to relate to the profession at large, their *failures* in practice, with the reflections and conclusions derived from them, it would greatly promote the common good. It would aid in forming a medical chart in a dangerous navigation, upon which would be discovered rocks and shoals, which would prove of vast importance to subsequent navigators.

Books abounding with successful results of practice are numerous, and I have sometimes thought, that some of them proved too much. They have appeared calculated to lead the sanguine and inexperienced minds of youth into a belief, that they had only to go and do likewise; while a moderate acquaintance with the realities of medical life, must soon teach some important and painful lessons.

If a medical man toward the close of a long professional life spent in observing disease, would write a little book, composed entirely of a detail of his unsuccessful cases, he would confer a lasting benefit on mankind.

Another condition of the urethra sometimes occurs as a result of a small and permanent stricture, which, if I remember rightly, has been described by some Eng-

lish surgeon. Its existence is made known by the formation of a tumour situated in the perineum, about the size of a common orange when split in half. It would seem to be formed by distension, combined with the ulcerative process. Its sides or walls are measureably defended from immediate danger of rupture; yet not sufficiently so to protect the patient from a risk of such consequences, before the absorbents have formed an opening through the integuments, and established an outlet for the urine by a fistulous opening in the perineum.

An example of this form of disease, once occurred to me in the Almshouse Hospital. The patient had an old stricture, with a tumour of this description in the perineum. He was affected with complete retention of urine. The poor fellow suffered extreme pain, and every effort to pass the catheter failed. My colleague, Dr. Hewson, and myself, concluded to make an outlet for the urine by an incision.

The patient was placed on a table, and I made a bold incision into the tumour, and gave free vent to the accumulated urine, to his great relief. I now attempted to complete the operation, by dividing the stricture by incision, and passing a catheter through the penis into the bladder. But such was the extreme restlessness and resistance of the patient, that it appeared almost impossible to carry out the operation at this time. My colleague joined me in giving place to our more tender feelings, and we allowed the poor wretch to escape from the table. We felt well assured that he was relieved from present pain and danger, and hoped that at some more propitious period he might receive, perhaps from other hands, the benefits of an operation for radical cure.

In such a case as the preceding, I should also consider the application of caustic to the stricture equally objectionable.

Rupture of the Urethra, and Effusion of Urine into the Cellular Texture.

It has been previously stated, that in some bad cases of stricture, the spontaneous efforts of the patient to discharge his urine, have proved sufficient to rupture the urethra behind the stricture, and to give rise to dangerous symptoms from the effusion of urine.

I have witnessed a few of these cases, and have found that if the effusion extends above the pubis, and about the groins and thighs, that the death of the patient may be expected, from the violence of the constitutional symptoms.

In this accident we have an illustration of a law of the human economy, that when urine is effused into the cellular tissue, it will cause erysipelatous inflammation and mortification of the parts subjected to its action. It is also known, that the injection of wine into the same membrane will produce similar effects. Hence the accidents which have arisen in attempts at the radical cure of hydrocele.

When the mortification is confined within the limits of the scrotum, the patient may escape with his life, being subjected to the inconvenience of a fistula in perineo.

An instance of this kind fell under my observation

a few years ago, in the practice of my friend Dr. C. D. Meigs, who called me in consultation. The patient was affected with stricture; a rupture of the urethra occurred behind the stricture; urine was effused; and mortification and sloughing of the scrotum, and about the perineum, took place.

I lately inquired of Dr. Meigs, if he could give me an account of the present state of the case. He informed me, that the patient recovered from the immediate effects of the accident, but that he had lost sight of him for several years. I presume that a fistula in perineo still exists, unless he has been subjected to appropriate treatment.

A case most threatening in its character, yet ultimately successful in its termination, came under my notice some months past, in consultation with Drs. G. M'Clellan, Pattison, and Hewson. The patient had suffered from a stricture for some years. Dr. M'Clellan had been called to him in an attack of complete retention. The urethra gave way behind the stricture, and urine was extensively effused into the cellular membrane. It had evidently extended beyond the scrotum, and there was a tumefied state of the skin just above the pubis.

It was agreed in consultation that Dr. M'C. should make a free incision into the integuments about the lower part of the scrotum, so as to allow of the escape of urine, and the separation of sloughs. The case was suspended in great jeopardy for many days, during which time alarming hemorrhage took place from the sloughing parts, which seemed to be arrested by the application of the Kreosote wash. A tonic course of treatment, with a generous diet to aid the

system in its restorative efforts, was most diligently pursued; and the patient finally recovered under the care of Dr. M'Clellan.

It has been established as a general rule, that the effusion of urine into the cellular texture of the scrotum, will produce the death of the parts subjected to its action. The following case, which is extraordinary in its character, is introduced as an exception to the rule. The case occurred in the practice of my friend Dr. Gebhard, who kindly furnished me with a full detail of it, from which the following summary has been formed.

CASE XXV.

Ruptured Urethra—Effusion without Gangrene.

I was called in consultation with Dr. Gebhard, in the winter of 1819—20, to see a little boy aged seven years. From the age of nine months, the child had been afflicted severely with disease, which I had no doubt was produced by calculi in the bladder. Dr. Gebhard had attended him on several occasions within the last eighteen months, with violent paroxysms resembling fits of the stone. On the day preceding my visit, the Dr. had been called to visit him in one of his usual attacks. On his visit the next morning, he found the scrotum uncommonly enlarged, tense, and diaphonous. The parts were punctured very freely with a lancet, and urine flowed freely through the punctures.

My attendance was now requested. We continued to watch the case with much solicitude for many days.

In the progress of the disease, the constitutional symptoms were very severe, and the danger of the little patient extreme. The tongue was dry and dark, and the pulse was frequent and feeble. The effusion extended above the pubis, and down the thighs. The skin was tense, and a moderate blush from inflammation was perceptible over the elevated surface. Mortification did not take place at any point. The bladder was relieved from pain and distension, urine flowed through the punctures in the perineum and scrotum, and occasionally a portion was discharged through the penis.

There was no doubt that the effusion arose from a rupture of the urethra. About the tenth and eleventh days from the occurrence of the effusion, a striking improvement in his condition occurred. The tongue became moist, and of a more natural colour, the pulse improved, his restlessness and delirium subsided, and he began to have a desire for food. The inflammation and tumefaction of the scrotum and adjacent parts had greatly abated; and though he was extremely feeble, his strength gradually improved under a nutritious diet, and in about a month from his attack he was restored to his usual strength.

The urine was discharged more copiously from several fistulous openings about the perineum than by the urethra.

These fistulæ gradually diminished in size and number, until but one remained, which assumed a permanent character.

Remarks.

The history of this case is unusually interesting. I presume the original cause of the rupture may be referred to a small calculus, which in the first instance blocked up the urethra.

But the fact of such extensive effusion of urine, without mortification, is worthy of remark. Inflammation occurred, but it was destitute of any malignant character. May not this circumstance be rationally attributed to the difference in the quality of the urine, between the adult and the child. In the former, when brought in contact with the cellular membrane, it is found to be an acrid, irritating fluid, spreading death and destruction in its course; while in the infant or child, its qualities are so bland as only to produce healthy inflammation.

SECTION II.

FISTULA IN PERINEO.

Having alluded to some of the causes which produce fistulous openings in the perineum, I shall briefly detail the result of my experience in the treatment of these cases.

Although this disease is not dangerous, yet it is extremely inconvenient and disgusting. Instead of the urine taking its natural course through the urethra, it is discharged through the fistulous opening. The patient is obliged, when called upon to pass urine, to retire to the privy, and place himself in the position required for an alvine discharge, or else be subjected to the filthy dilemma of having his shirt and small-clothes constantly wet.

The indications for radical cure in these cases are clear and simple; and may be briefly defined.

The first consists in the removal of the stricture which lies anterior to the fistulous opening. This may be accomplished by the liberal use of caustic, remembering that as the urine has a free outlet through the fistulous opening, there is nothing to fear from its application.

There can be no risk of rupture of the urethra behind the stricture, inasmuch as an opening already exists.

Having destroyed the stricture, and established the route to the bladder, the second indication is accomplished by passing a succession of catheters into the bladder, and constantly retaining them in their position, so that not a single drop of urine shall be permitted to pass through the fistulous opening.

Having removed the urine, the primary source of irritation, from the sinus; the third indication consists in breaking down its hardened walls, by the application of caustic.

This object being accomplished, the final indication consists in approximating the sides of the fistula, by adhesive strips. Healthy granulations arise through the fistula, and its sides are brought into contact. In this way the opening is closed, the parts become consolidated, and the cure is radical.

In illustration of these views, the following cases are presented.

CASE XXVI.

One of the worst cases of this disease, that I ever witnessed, came under my notice in the summer of

1820. The patient was a gentleman from the West Indies, who came to this country to seek the advice of Dr. Physick. Drs. Gibson, Horner, and myself were associated with him in consultation. The opening in the perineum was so large, as almost to foreclose the hope of a cure. The stricture had been removed at home, and a catheter could be passed into the bladder.

Dr. Physick, from his extensive experience in such cases, was more sanguine of success in the case, than were his associates. I can speak, at least, for myself. The event justified the correctness of his judgment. The walls of the sinus were broken down by the caustic, which was freely employed, while the catheter was steadily retained in the bladder. Strips of adhesive plaster completed the cure.

CASE XXVII.

An elderly man came under my notice in the surgical ward, of the Almshouse Hospital, with fistula in perineo, of seven years duration, attended with a permanent stricture of the urethra.

It was a remarkably fine case for testing the efficacy of appropriate practice, and I felt particularly pleased in presenting it to the students in attendance. The indications to be fulfilled were explained, and an opportunity was afforded for the class to watch the progress of the case. The caustic was applied freely and frequently to the stricture. No hemorrhage ensued, and I am inclined to believe, that in old strictures, where the

sides of the canal are indurated, it is less to be feared than in recent cases.

In due course of time, the stricture was so far removed that a catheter could be passed forward into the bladder, in which situation it was retained. The hardened walls of the fistula were now attacked with caustic, and soon destroyed. Healthy inflammation was followed by granulations which filled up the cavity; the edges were approximated by adhesive strips; cicatrization ensued, and the cure was effected.

Soon after this I had a very similar case in a sailor, in the venereal ward of the Pennsylvania Hospital. The fistula had existed for about two years and a half. The same principles of practice were applied with equal success.

CHAPTER IV.

TIC DOLOUREUX OF THE URINARY BLADDER.

THE experience of the medical profession is greatly enlarged on that painful and paroxysmal affection of the nerves, denominated tic douloureux. A few years ago, this term was almost exclusively applied to a severely painful affection of the supra and infra orbital nerves; the disease being always associated in the mind with a facial locality. More recent investigations have shown that this affection may exist in various parts of the body. Under the generic term of neuralgia, we have a class of diseases which excite much attention at the present time.

I have known instances of great suffering in the urinary organs, from this form of disease. Its attacks are violent, and bear so exact a resemblance to the paroxysms induced by the presence of calculus in the bladder, that it is impossible to decide between the two conditions. In these cases the bladder has been frequently sounded without detecting a stone, and the subsequent progress of the cases induced the belief that none had existed.

I will briefly state the result of my observations on this subject.

CASE XXVIII.

Some years ago, a young man came to this city to consult Dr. Physick; he was affected with the usual symptoms of a calculus in the bladder.

Dr. Physick did not examine him particularly, but recommended him to my care, as a proper patient for the Pennsylvania Hospital, where he might undergo the operation of lithotomy.

After his admission, on attempting to sound him, he complained very much of exquisite pain; the parts were irritable to an unusual degree. No stone was discovered by the examination. My colleagues joined me in efforts to discover a stone by the usual means, but without success. The patient suffered from agonizing pain, which attacked him in frequent paroxysms, and resembled exactly "fits of the stone." After remaining for a considerable length of time in the Hospital, and undergoing a variety of treatment, he was discharged without being materially benefited, and returned to his friends. The final issue of the case I never heard.

CASE XXIX.

I was called to visit a middle aged married lady in this city, who was affected with similar symptoms. She was naturally of a very delicate constitution, and of a nervous temperament, and had borne a number of children.

She was attacked with this affection of the bladder, soon after the birth of a child. Her paroxysms of pain were violent, and resembled exactly the symptoms produced by stone. She was repeatedly sounded, but no calculus was ever discovered. After suffering intensely from these paroxysms for several months, her symptoms disappeared, and she was restored to her usual health.

I am aware that the above cases do not afford conclusive evidence of the existence of this disease. Patients may labour under stone in the bladder, and may be repeatedly sounded, before it is discovered. Yet the examination may ultimately prove successful. The calculus may be removed by an operation, and the patient be finally restored to health. A case of this kind once occurred in my own practice.

It may also happen that a calculus will become encysted, and in this way the symptoms will disappear, leaving the impression on the mind of the surgeon, that the symptoms arose from some other cause.

The question can only be settled by post mortem examination, and an opportunity has been furnished me of testing it by this method. I have also the pleasure of adding Dr. Physick's testimony to my own, on this point. In conversation with him some years since on this subject, he informed me, that he had a gentleman under his care, who was affected with clearly marked symptoms of stone in the bladder. Dr. P. sounded him frequently without being able to discover a calculus. The patient finally died. On examination after death, the bladder was found to be healthy, and no stone could be found.

After stating this case, the Doctor very emphatically

said, "The disease is tic doloureux of the bladder." The definition appeared truly concise and appropriate, and I have therefore adopted it.

Since that period a case has fallen under my own observation, which is very conclusive, and has confirmed me in the opinion, that the urinary bladder is the subject of an extremely painful nervous affection, which cannot be designated by a term more appropriate than that which is here adopted.

The following case is a fair example of this disease.

CASE XXX.

Tic Doloureux of the Bladder.

7th mo. 4th, 1822. Died this morning in the Pennsylvania Hospital, R. N., a young woman who has been an inmate of the institution for several years, during which time her sufferings have been extreme.

She was afflicted with violent paroxysms of pain, exactly resembling fits of the stone. She also appeared to labour under disease of the uterus; had obstinate amenorrhœa; sometimes a vomiting of blood.

Various expedients were tried for her relief—in fact, it seemed as if all the medical and surgical skill of the institution was fairly exhausted on this afflicted, but patient sufferer! She was placed under the care of physicians as well as surgeons. Among the palliative remedies in her paroxysms of *agony*, for so they may be called, venesection and opiates afforded most relief. Toward the conclusion of her disease, she had two

attacks of dysentery, and was happily released from her troubles in the last attack.

The symptoms of stone in the bladder were so strongly marked in this case, that the patient was often sounded. I believe all the surgeons searched for stone. I did, repeatedly, and even proposed dilating the urethra, with the sponge-tent, in order to introduce the finger into the bladder.

To conclude, it may be said, that I never witnessed a case of more severe and protracted suffering, nor one in which the symptoms of calculus in the bladder appeared to be more clearly marked. And now, behold the humiliating evidence of the fallibility of human judgment, as displayed in the dissection of R. N.

Examination—Post mortem.

The bladder contained no stone, and, with the kidneys and ureters, presented *a perfectly natural appearance!* The stomach, liver, lungs, and uterus, all healthy! The intestines gave some signs of recent disease. The pancreas was indurated. The muscles red and firm. There was a considerable amount of fat over the abdomen, and on the omentum, although the patient had a very bloodless aspect.

I was informed by Dr. John Rhea Barton, who was present at the dissection with Dr. Price and others, that if he had been called upon, in the dissecting room, to select a subject whose viscera, generally, presented a sound and natural appearance after death, he could scarcely have selected one better adapted to the purpose than the mortal remains of the deeply afflicted R. N.

CHAPTER V.

NEPHRITIS.

THE occurrence of nephritic affections, especially in gouty patients, is familiar to most medical men, and in the usual course of practice, cases of this kind require their care.

The seat of this painful affection is primarily in the kidneys, and from thence is propagated to contiguous parts. It is caused by the formation of small calculi in the kidney. Should one of these pass through the ureter into the bladder, a train of most painful symptoms ensue, often causing great alarm to the patient and his friends; but seldom being really dangerous.

The disease is generally marked by some peculiarities which enable the practitioner to form a correct diagnosis, by referring to the anatomical and relative position of the parts. The pain is referred to the hypogastric region, having an obliquity in its course, corresponding to the passage of the ureter from the kidney to the bladder. The testis on the affected side is frequently retracted and painful. This fact admits of a ready explanation, when it is recollected, that the ureters and vasa deferentia decussate each other in the neighbourhood of the part where the former enter the bladder; hence, irritation and pain in the one, can readily be propagated to the other. The bladder and urethra, like continuous links in the chain, may experience the

effects of morbid association. The whole nervous system may be brought into sympathy. That important viscus, the stomach, may largely participate, and become involved even in convulsive action, manifested by severe retchings and vomiting. At the very onset of the disease, the patient is often instantaneously affected with great prostration of system, pallor and coldness of surface, and feebleness of circulation. I have known syncope to take place at the accession of the attack. In illustration I will state a case.

CASE XXXI.

A merchant of middle age, a strong, well-built man, of temperate habits, and possessing considerable firmness of disposition, went to bed in usual health. He awoke in the night, and felt a disposition to urinate. He rose from bed for the purpose, and was instantly seized with such intense pain, that before his wife could assist him, he sunk on the floor in a state of syncope. The alarm of his family can be easily imagined. I saw him shortly after the attack. His skin was cold; his pulse very feeble; and his pain was agonizing. Under proper treatment he speedily recovered.

In the early part of my practice, I once saw this disease assume an intermittent form. As the case was unusual in its character, I will detail it from my note book.

CASE XXXII.

In the winter of 1806, I was called one night from my bed, to visit J. R., a very respectable man, who had exchanged the active life of a farmer for the more easy situation of a citizen. I found him sitting in a chair before the fire. The pain corresponded with the course of the ureter. The testis participated. He had a scalding sensation when he attempted to pass water, accompanied with tenesmus, nausea, and vomiting. The case was clearly marked, and depended upon the passage of a calculus through the ureter. I directed a dose of calomel and opium, and was about to put other plans in operation, when, before even taking the medicine, he said he felt relieved, and that he thought something had passed from "a small passage into a larger one."

I now obtained from him a clear history of the case. His first attack was some days before I saw him; it took place while on a journey from New England to Philadelphia. It came on about 3 o'clock in the morning and lasted about two hours. It had recurred regularly every succeeding night since, about the same hour, and its duration was nearly the same. When the attack commenced, he always found that he was more easy in the erect, than in the recumbent posture; and it was his uniform practice to rise from bed, and set before the fire until it went off. At the time he sent for me, the pain was more violent than he had ever before experienced. This proved to be the last paroxysm.

Nephritic cases are often sudden in their accession, and speedy in their termination. The patient is in-

stantly sensible of relief when the calculus falls into the bladder.

I have met with some cases where the disease assumed a more chronic form, confining the patient to his room and bed, and attended with inflammation and fever. It would seem as if the calculus was too large readily to pass, and considerable time was required before this could be accomplished.

Treatment.

The course of treatment to be pursued in the acute form of nephritis is worthy of close consideration. I feel more inclined to examine this part of the subject, from the fact, that our practice in these cases is not uniform and settled. I believe no small injury may result from associations formed in medical minds, which must have an important bearing on therapeutics. Thus pain and inflammation are so intimately associated, that it seems in some instances impossible to dissever them. Hence, in all those cases of acute nephritis, one of the first indications founded upon this conclusion is, the free use of the lancet. And where inflammation is to be measured by intensity of pain, it may be free indeed. Let us now advert to the circumstances which may be reasonably supposed to attend an acute attack of this disease. Let us take the case of the merchant, who at the very onset was prostrated by syncope, almost instantaneously, on the floor of his bed-chamber. What caused this intense pain? was it not the passage of a hard and irregular shaped calculus along the extremely sensitive ureter? Was not the pain suddenly induced by the operation of a mechanical cause?

That inflammation may follow as a consequence of

contusion, or lesion of parts, is a principle fully understood. But that it should be coeval with the infliction of the injury, is utterly at variance with every principle of surgical pathology. Time must be allowed for the injured vessels to rally their energies, and assume those peculiar actions which constitute inflammation.

Does the state of the system, in a case of severe nephritis at its commencement, warrant the conclusion that the lancet is required? Are pallor and coldness of surface, with a very feeble state of the circulation *suddenly induced*, to be accepted as evidence of inflammation? The answer is, no—but the reverse—a state of prostration. It may be argued, that even if inflammation does not exist, free bleeding may be useful in order to prevent it.

To discuss this question, would at present be out of place; were it entered upon, I think it might be shown by a reference to practical facts, that the doctrine of free bleeding as a prophylactic for inflammation, is far more vulnerable than is imagined. I regard it as unsound. Perhaps at a proper time, an opportunity may be offered for further illustration.

It may be urged that patients speedily recover after free bleeding. It may be replied with equal truth, that they speedily recover without it. The violent case of the merchant was a striking instance in point—he did not lose one drop of blood.

I have long since established it as a medical axiom, when a practitioner can achieve his object by a resort to safe, yet efficient remedies, without drawing largely on the constitutional energies of his patient, it is wise to pursue the former course, and reserve the latter for

those emergencies which do arise, where minor considerations must yield to the one all-absorbing indication, the rescue of the patient from the grasp of a fatal disease. These observations may be regarded as a digression; but they are felt to be due to the profession, inasmuch as physicians, as well as surgeons, are deeply interested in the disease now under consideration.

The primary indications of treatment in acute nephritis, are the following:—Allay pain and irritation by the use of opiates, having reference at the same time to the state of the bowels. If they should be confined, it is advisable to combine some purgative with the opiate. I often combine two grains of opium with ten or twelve grains of calomel made into pills. Sometimes if the symptoms are very urgent, I have given three grains of opium with the calomel. In many cases I find a dose of castor oil with laudanum, to answer quite as well as the calomel. Should the stomach reject medicine, I resort to anodyne injections, preceded by laxative enemata, if there is reason to suppose the rectum contains feces. When we consider the contiguity of the rectum to the urinary bladder, it is easy to understand how a soothing impression made on the former, will be speedily propagated to the latter. Hence an anodyne injection sometimes acts like a charm. Could it be readily obtained, it might often supersede the exhibition of remedies by the mouth.

Another indication consists in restoring heat and action to the surface, and particularly the lower extremities. Thus sinapisms may be applied advantageously. Immersion of the feet and legs in warm, or rather hot water, to which either mustard or coarse salt is added. Spirituous fomentations to the abdomen are frequently

useful. If relief is not procured, a warm bath would be clearly indicated. These means seldom fail to mitigate the violence of the disease. The calculus passes into the bladder, and full relief is obtained. When the stomach will bear mild demulcent drinks, they should be freely used. Sometimes before a resolution of the paroxysm, reaction takes place, and fever ensues; then depletory measures are indicated. In vigorous subjects general and topical bleeding are required. In subjects of a more delicate and feeble character, cupping or leeching about the lumbar vertebræ, aided by laxatives, warm bath, and injections, may prove sufficient. Sometimes I have directed large quantities of tepid flaxseed-tea to be introduced into the bowels, to act upon the principle of a warm bath internally applied. Anodyne injections, when the pain is severe, are particularly proper.

Among the internal remedies, the spirits of turpentine may be noticed. One of my medical friends who has been severely afflicted with nephritis, has great confidence in the remedy. When he feels the least threatening of an attack, such as uneasiness and slight pain about his kidneys, he will alight from his carriage before the shop of any apothecary, and take twelve drops of spirits of turpentine on loaf sugar, with decided relief.

Patients liable to nephritis, often consult their physicians relative to prophylactic remedies. To enter fully into this subject would lead beyond my prescribed limits. I would briefly remark, that in some instances the *uva ursi*, the extra soda water, and the Saratoga water, appear to have produced a very salutary effect. In this city, the scabious tea is a popular remedy. It has derived much of its reputation from

a valuable old citizen long since deceased, who was in extensive business as a biscuit baker. He was severely afflicted with the disease, and had derived such relief from the scabious, that at the proper season to gather the plant, he was in the practice of going out with his work-people, and his horse and cart, in order to collect it in the fields round the city. Having obtained a large supply, he always kept it for gratuitous distribution, humanely desiring to confer that relief on others, which he believed he had himself received from the scabious.

It has been stated, that nephritic affections, depending on calculi formed in the kidney, although very painful, are seldom of a dangerous character.

It now remains for us to consider another morbid condition of this organ, by which its structure is gradually altered, and the death of the patient is the result.

The following cases illustrate this singular form of disease.

CASE XXXIII.

Irritable Bladder and Urethra—Disorganization of the Kidney—Death.

4th mo. 10th, 1821. B. R., a respectable merchant, about sixty years of age, had long been subject to gout, and had lately been affected with much depression

of mind, arising from a failure in his business. For more than a year preceding his death, he had suffered grievously from an affection of the urinary organs. He was obliged to make frequent efforts to pass small quantities of urine, during the day and night. His urethra was extremely irritable, and the most careful attempts to introduce the catheter caused him great pain. I at one time suspected the presence of a calculus, but could discover nothing by sounding. Sometimes he had retention of urine requiring the use of the catheter.

Under these circumstances, various means of relief were tried without any salutary effect. His strength gradually failed, his complexion assumed a sallow hue, and his whole aspect exhibited evidences of great bodily suffering. It was also evident, that a sensitive and upright mind participated largely in his afflictions. For several weeks before his death, he was affected with severe muscular spasms, affecting both the upper and lower extremities. There was also an evident failure in his mental faculties a short time before his death.

Dissection.

The body was examined by my friend Dr. Harlan.

The internal surface of the bladder was interspersed with dark spots, curiously intersected by whitish bands, which did not rise above the surface of the mucous membrane. At the neck of the bladder around the opening of the urethra, there was a red spot about the size of a quarter of a dollar.

The kidneys were unusually small. The infundibula

of the left kidney were very large, and the pelvis of the right was very much distended, giving the idea of a stricture in the ureter, and a regurgitation of urine into the pelvis; though no stricture was discovered.

The prostate gland presented a healthy appearance. From the symptoms, I had expected to find great thickening of the mucous and muscular coats of the bladder.

I have extracted from my notes the following case, which, in some respects, bears a strong resemblance to the preceding.

CASE XXXIV.

In the autumn of 1809, I was consulted by an elderly and highly respectable man, from Lancaster county, who came to this city seeking relief from a very painful disease. He had been for a long time affected with an irritable bladder, and an exquisitely morbid sensibility of the urethra, such as I had never seen surpassed. In his attempts to pass urine, which were frequent, he complained of severe pain and scalding in the canal, particularly towards the arch of the pubis. The pain extended from the point of the penis inwards, and he experienced slight uneasiness about the neck of the bladder. He once had a stricture, but this had been cured.

I sounded him for stone, examined the prostate, but could find nothing which satisfactorily explained the symptoms. He was under my care for many weeks, and a variety of remedies were tried. His complaint

was palliated, but he was not permanently benefitted. He used opium, hyosciamus, stramonium, colchicum, &c., also, emollient injections into the bladder. He returned home for a while, and subsequently came back to the city, and placed himself under the care of several different practitioners. I was called in consultation with one of them, but, as on other occasions, no treatment successfully reached the case. He returned home, and died.

I have been informed by one of his friends, that he was examined after death, and that one of his kidneys "was nearly wasted away." His friend was not a medical man, and of course I could not obtain the precise information which I desired. The symptoms bore a strong resemblance to the preceding case, and I presume depended on the same cause.

In reflecting on these cases, which, so far as my observation extends, are of an unusual character, I have arrived at the conclusion; that if I should again meet with a case of extreme sensitiveness in the bladder and urethra, which could not be referred to any obvious cause, as an enlarged state of the prostate, stricture of the urethra, &c., and which differed from *tic douloureux* of the bladder, in the permanency of the pain, and the absence of paroxysms, I should refer it to some organic lesion of one or both kidneys, depending on a gouty diathesis.

Whether this disease could be eradicated by any method of treatment, pursued in the early stage, I am altogether unable to determine from experience. Perhaps the application of setons, or perpetual blisters on

each side of the spine, or even in a remote situation, might exercise a favourable influence, by causing a weaker part in the vicinity of the affected organ, and thus acting on the principle of metastasis.

The remedies adapted to the treatment of gout, when it occurs in other parts of the body, might also deserve a trial.

CONCLUSION.

My observations on Strangulated Hernia, and some of the Diseases of the Urinary Organs, are now closed. It will be perceived, that the volume is plain and practical in its character. It is said, every man who thinks theorises. Perhaps, in one sense, this may be true. It is very important, however, that theories should be based on a solid foundation. I hold myself still to be a student in the school of practical observation, and am frequently picking up useful knowledge in passing along, and am gaining much information from others. I have found out too, that it is an easy matter for an ingenious man to tell what he thinks, and sometimes very useful hints are to be obtained from the thoughts of others. Still it must be acknowledged that more is to be learned when a man, whose accuracy is to be depended on tells what he really knows. In common with the elder members of the profession, the writer has seen beautiful theories erected—the builder has admired the work of his own hands—a few simple facts have undermined the foundation—the edifice has tottered, and fallen into ruins. It is my earnest desire to avoid every just cause for the suspicion of vanity and egotism. In putting forth this book, the writer could not gain his own consent to send it out, with abundance of apologies for its numerous imperfections, while at the same time he did not believe such to be the fact.

Still he is fully aware that an author may view his first book, a little like a parent views an only child. He may see beauties where a disinterested person could not discover any thing uncommon. What is more important, there may be defects and blemishes, which strike the eye of a stranger very forcibly, that the parent, having the child constantly before him, is scarcely sensible of their existence. My object is the diffusion of medical information, in the hope that it may prove useful to others. Could the reverse be supposed, or that any one part of the work might lead to unsound conclusions, or incorrect practice, most sincerely would the author regret that any of his manuscripts ever found their way into the hands of the printer. So far, then, from shrinking from criticism in the spirit of candour and kindness, it is rather invited, never expecting to be too old to learn, and always desiring to have my errors corrected, and improvements placed in their stead.

It is one of the consolations of my life, to look around among an extensive acquaintance with the medical profession, some of them older, but a very large majority younger than myself, and to feel that they are my brethren. Although we may honestly differ in some of our medical views, yet I can rejoice in extending the hand of friendship to a numerous body of fellow labourers in a profession which has for its object the mitigation of human misery, and the preservation of human life. It is a profession which is high, and ought to be dignified and honourable; but neither its dignity, nor its honour, can depend upon high sounding titles, nor upon name. It must be bottomed on solid attainments in medical science, and separated from merely sordid views. That

it is still associated with many of the imperfections, which are incident to humanity, is freely confessed, while it may not be arrogant to believe, that the numerous streams which flow forth from the fountain of medical science, are still extending their blessings over the land, carrying with them healing virtue and consolation to the afflicted and destitute.

There is now rising around us a large body of talented and enterprising young men, who have most industriously engaged in the arduous and responsible duties of medical life. I view with deep interest their rising usefulness, and heartily wish them good speed.

To the elder members of the profession, and to some in an especial manner, my feelings are of no ordinary character. As the circle narrows, our attachments increase. How many have we followed to the grave. The very hands that were so frequently stretched forth to parry the arrow of the archer, have at last fallen powerless from his wound. Some of us have stood side by side in times of public calamity, sharing a common danger, while some of our brethren have fallen in the conflict. The pestilence which walketh in darkness, and wasteth at noon day, we have seen to come up into the windows, and to cut off the young men from our streets. We still remain—we still join in daily professional intercourse, and with entire confidence in each other, share mutual responsibility. How can it be other then, that the humble hope should be indulged, that when we also shall fall before the arrow of the destroyer, the spirits that are now congenial, shall still be permitted to mingle together, and enter upon a more exalted sphere of existence, where hope will be lost in fruition.

EXPLANATION OF THE PLATES.

PLATE I.

View of the interior of the lower part of a bladder, with a diseased prostate gland, to show the effect of an enlargement of the third lobe of that gland.

a, a. Section of the parietes of the lower part of the bladder, posteriorly.

b, b, b, b. The diseased prostate gland greatly developed.

c. The third lobe of the gland enlarged and projecting into the cervix of the bladder, where it overhangs the internal orifice of the urethra, like a valve.

d. The membranous portion of the urethra.

e, e. Part of a catheter introduced through the urethra into the bladder, lifting up the third lobe of the prostate gland in its passage.

f, f. The vesical extremities of the ureters.

g. g. The seminal ducts.

PLATE II.

Interior view of the bladder, with enormous development of the third lobe of the prostate gland.

a, a. Section of the parietes of the bladder.

b, b, b. Enlarged prostate gland.

c. Third lobe of the gland projecting far into the bladder.

PLATE III.

Section and interior view of the fundus of a bladder taken from a subject with enlarged prostate gland; showing the columns of the mucous coat, caused by long-continued dysuria, and resembling the muscular columns of the heart.

PLATE IV.

Fig. 1. A canula for guiding a catheter into the bladder, in cases of enlarged prostate gland.

a. The eye of the instrument.

b. Two marginal notches corresponding exactly with the eye of the instrument.

Fig. 2. The extremity of the same instrument, with the catheter introduced; to show the obliquity of the extremity of the latter, on passing out at the eye.

a. The end of the catheter.

Fig. 3. A view of Dr. Parrish's favourite bistoury for the operation on strangulated hernia.



Drawn from Nature by
J. Drayton.

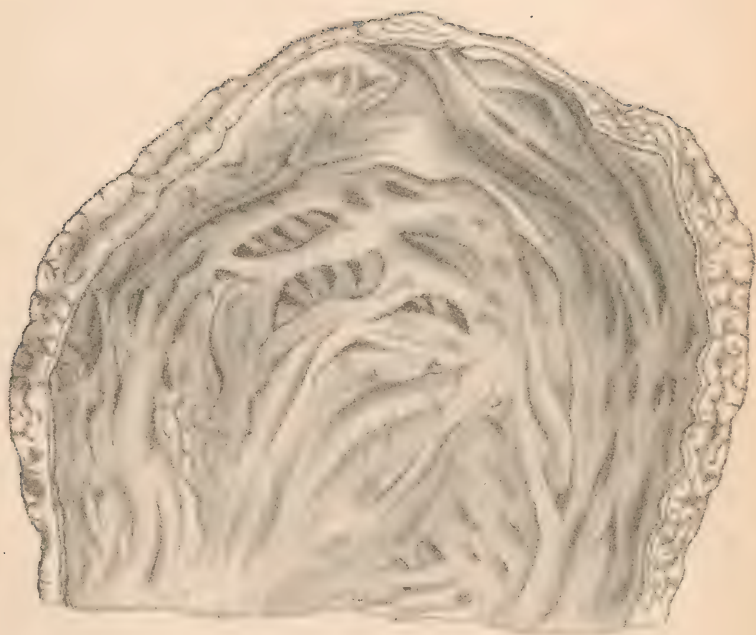
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